## CORRESPONDENCE DIRECTORY

**UNIVERSITY OF CALIFORNIA, BERKELEY, CALIFORNIA 94720**

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<tr>
<th>Department</th>
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<tr>
<td>Admissions</td>
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<tr>
<td>Undergraduate Office of Admissions</td>
<td>127 Sproul Hall</td>
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<td>Graduate Office of Admissions</td>
<td>336 Sproul Hall</td>
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<tr>
<td>School of Optometry Office of the Dean</td>
<td>103 Optometry</td>
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<tr>
<td>Registrar's Office</td>
<td>Window 3, Sproul Hall</td>
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<tr>
<td>Dean of Residence</td>
<td>Individual college or school</td>
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<tr>
<td>Housing Services</td>
<td>2401 Bowditch Street</td>
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<td>Residence Status</td>
<td>590 University Hall</td>
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<td>Foreign Student Adviser</td>
<td>International House, Campus</td>
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<td>Foreign Students' Problems</td>
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<tr>
<td>Selective Service and Veterans Affairs</td>
<td>2539 Channing Way</td>
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<td>Scholarships</td>
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<tr>
<td>Undergraduate Committee on Undergraduate Scholarships</td>
<td>2536 Channing Way</td>
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<td>Graduate Committee on Graduate Division</td>
<td>225 Sproul Hall</td>
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<td>Fellowships</td>
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<td>Prizes</td>
<td>2420 Bowditch Street</td>
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<td>Employment</td>
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<td>Executive Director, ASUC</td>
<td>207 Eshleman</td>
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<td>University Extension</td>
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<td>University Extension</td>
<td>2223 Fulton Street</td>
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<td>Policy Matters</td>
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<td>Chancellor</td>
<td>3335 Dwinelle Hall</td>
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<tr>
<td>President</td>
<td>714 University Hall</td>
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*Telephone: Area Code 415 642-6000  Cable Address: UNIVCAL*

**UNIVERSITY OF CALIFORNIA • BERKELEY VOLUME 63 NUMBER 9 MAY 15, 1969**

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Announcements herein are subject to revision. Changes in the list of Officers of Administration and Instruction may be made subsequent to the date of publication.
Admission to Undergraduate Status:
Persons planning to enter the undergraduate colleges or schools for the first time in regular session must file application for admission with the Admissions Officer by these dates. These deadlines apply to regular, limited, or special status including applicants for a second bachelor's degree or intercampus transfer.

Admission and Readmission to Graduate Status:
Final date for filing credentials and applications with the Dean of the Graduate Division for admission or readmission to graduate standing.

Readmission to Undergraduate Status:
Final date for filing applications with the Registrar for readmission to undergraduate status.

Registration of students, graduate and undergraduate, in departments at Berkeley.†

School of Law, registration of students.

School of Law, term begins.

School of Law, instruction begins.

School of Law, study-list filing.

Examination in English for foreign students.

School of Law, final date to register.

Quarter begins.§

Subject A Examination.

Foreign Language Placement—Achievement Tests.

Late Registration begins. Fee $10.¶

Preenrollment and assignment to sections.

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*Importance of Early Application. In order to give time for necessary correspondence and for due notice to applicants who may be required to take examinations for admission, applications and credentials should be forwarded to the Admissions Officer at the earliest possible date.

† Registration forms may be obtained beginning May 12, by those students who complete the spring quarter and, though eligible to continue in the same status, remain out of school in the summer quarter without applying for honorable dismissal or leave of absence. Students registered in the summer quarter who continue in the same status in the fall quarter obtain forms beginning August 11.

§ Except School of Law.

¶ Dates to be determined.
School of Law, final date for students to file petitions to add or drop courses. Fee thereafter, $3. At the discretion of the Dean, grade F may be assigned in discontinued courses.

Final date for filing with the committees in charge the final form of dissertations for all doctoral degrees to be conferred in 1969-70.

Instruction begins.§

Study-list filing. See Instructions to Students received at time of registration for details. Fee for late filing, $10.§

Final date to register.§

Instruction ends.§

Final examinations in departments at Berkeley.§

Final date for filing applications in candidacy for all master's degrees to be conferred in 1969-70: Office of the Dean of the Graduate Division, 250 Sproul Hall. All signatures required upon these applications must be obtained in advance.

Last date for filing without fee announcements of candidacy for the bachelor's or the doctor of optometry degrees to be conferred 1969-70. Fee thereafter, $3.

Final date for filing announcements.

Final date for filing applications in candidacy for all doctoral degrees to be conferred in 1969-70: Office of the Dean of the Graduate Division, 250 Sproul Hall. All signatures required upon these applications must be obtained in advance.

Final dates for students to file petitions to add or drop courses. Fee thereafter, $3. At the discretion of the Dean, grade F may be assigned in discontinued courses.

Undergraduates:

Graduates:§

Final date for filing with committees in charge the final form of theses for master's degrees to be conferred in 1969-70.

Final date for filing dissertations with the Dean of the Graduate Division for all doctoral degrees to be conferred in 1969-70.

Academic and Administrative Holiday

Instruction ends.§

Final examinations in departments at Berkeley.§

Academic and Administrative Holiday

Final date for filing applications for fellowships and graduate scholarships for 1970-71.

§ Except School of Law.
Final date for filing theses with the Dean of the Graduate Division for all master's degrees to be conferred in 1969-70.

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<tr>
<th>Quarter ends.§</th>
<th>Summer '69</th>
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<td>Dec. 19, Friday</td>
<td>March 24, Tuesday</td>
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<td>Sept. 6, Saturday</td>
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<td>Dec. 20, Saturday</td>
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<td>Academic and Administrative Holiday</td>
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<td>Dec. 25, 26; Jan. 1, 2, Thursday, Friday</td>
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<td>Final date for filing undergraduate scholarship applications for 1970–71 or any quarter thereof.</td>
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<td>Jan. 15, Thursday</td>
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§ Except School of Law.
"The central mission of the University of California is learning. Learning encompasses transfer of knowledge, but not indoctrination; respect for the past, but not idolatry; high concern with academic excellence, but not to the exclusion of the whole person.

"We are committed to providing the most favorable environment for learning, not only in attractive campuses and modern facilities, but more importantly in preserving and encouraging the spirit of free inquiry and dedication to truth which have made the University of California a truly great University."

With these words, President Charles J. Hitch reaffirmed the tradition of excellence in teaching and research that has guided the University of California for one hundred years. As the oldest of the nine campuses of the University, Berkeley has long been in the forefront of this search for truth, and it has often led the way in pioneering efforts on the edge of human knowledge. Since the first day of classes here in 1873, the Berkeley campus has stood for quality and imagination both in its classrooms and its laboratories and has often encouraged bold innovations within the framework of its time-tested traditions.

The University has come a long way since the Berkeley campus was opened in 1873. Beginning as a small institution with only two buildings and an enrollment of 167 men and 22 women, it has grown to nine campuses with more than 98,500 students, a large and distinguished faculty, and research stations throughout the state. Recently it has established Education Abroad centers in ten countries in Europe, South America, and the Far East.

The Berkeley campus itself has grown almost beyond recognition. From a small institution surrounded by farmlands, it has become a city within a city. Its 27,500 students, together with its large faculty and staff, would populate a city larger than Modesto. Instruction is offered in 86 undergraduate departments, in more than 5,000 courses. Like the
metropolis it is, the campus makes available a multiplicity of fields of study and diversity of opportunity and activity.

Berkeley is above all a place of learning, and although its size makes possible many methods and channels of learning, size also has its dangers. The campus must make special efforts to avoid regimentation in an impersonal atmosphere. It must be a human and humane structure, not a cold bureaucracy.

The student unrest of the Free Speech Movement of 1964 and its aftermath focused attention on the problems besetting students at a campus as large as Berkeley. Among the results of this unrest have been studies to make the University more responsive to the changing needs of its students. Although the American Council on Education ranked Berkeley at the top of the nation’s universities for the quality of its graduate faculty, its graduate education, and its library, the campus has learned that a distinguished and much-honored faculty, a richness of research facilities, and a gifted student body are not necessarily enough. No institution can rest on its laurels. The people who shape a university must constantly invigorate its traditions and challenge its established ways if it is to continue to be a vital force in stimulating the talents and minds of the young. Through experiment and innovation, by keeping classes small and giving the student a greater chance for independent achievement in closer association with the faculty, the campus community is trying to overcome its problems. Only by so doing will it continue to preserve and encourage the spirit of free inquiry and dedication to truth that have made Berkeley one of the intellectual centers of the world.
INTRODUCTION

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Your assistance in conserving copies of this publication will be appreciated. The savings realized can be devoted more directly to educational purposes.
Introduction

History of the University of California

The promise of a University of California is contained in the State's constitution, drafted in Monterey in the gold rush year of 1849. California was admitted to the Union the following year, although almost twenty years were to pass before the hope for a public university was realized.

Impetus for the building of a university came from private citizens and the federal government as well as from the State. A forerunner of the University of California was the Contra Costa Academy, established in 1853 in downtown Oakland by a group of churchmen led by the Reverend Henry Durant. In 1855 that institution was incorporated as the College of California, and plans were made to purchase a new site north of Oakland. The community developing around this new site was given the name of Berkeley in 1866.

In 1853 Congress had bestowed upon the State 46,000 acres of public lands with the stipulation that proceeds of the sale of the land were to be used for a "seminary of learning." The Morrill Act of 1862 gave another grant of public lands to the State for the establishment of a college to teach agriculture and the mechanic arts.

The College of California offered its buildings and lands to the State in 1867 on condition that a "complete university" be created to teach the humanities as well as agriculture, mining, and mechanics. The legislature accepted, and on March 23, 1868—Charter Day—Governor Henry H. Haight signed the act that created the University of California.

The University, heir to the lands, buildings, library—and even alumni—of the old College of California, now came into being. The move to the new "College Site" in Berkeley came in 1873, when North Hall and South Hall (the latter still in service) were completed. These two Victorian-style buildings stood out prominently on an area that was barren except for a few farmhouses and barns. Students came to class from Oakland by horsecar, traveling up what is now Telegraph Avenue. Some traveled from San Francisco across the bay by ferry, then up to the campus by horsecar—about a two-hour trek. As enrollment increased at Berkeley, more buildings were added—first a mining and engineering building, a library, and a gymnasium; then mechanics, philosophy, agriculture, botany, and chemistry buildings—all before the turn of the century.

As the Berkeley campus grew, other campuses were added throughout California: the San Francisco Medical Center in 1873; the Davis campus (initially the University Farm) in 1905; the Riverside campus (initially the Citrus Experiment Station) in 1907; the San Diego campus (initially the Scripps Institution of Oceanography at La Jolla) in 1912; the Los Angeles campus (UCLA, initially the Los Angeles State Normal School) in 1919; the Santa Barbara campus (initially Santa Barbara State College) in 1944; and the Santa Cruz and Irvine campuses in 1961. The nine-campus University of California is now one of the largest in the world. Each of its campuses has a separate administration, organization, and style of academic life.
The University also maintains research stations, field stations, Extension centers, and other facilities of research and instruction in more than 80 locations throughout California. The widespread achievement and influence of the University is reflected in the vigor of California's economy, the well-being of its citizens, and the leading role of California in the nationwide advancement of learning and technology.

With such extensive and distinguished resources, the University enjoys a foremost position among state universities, offering advancement of knowledge in virtually every field of human endeavor in modern life, and continuing to serve as an indispensible force in the growth and development of our society.

**Students** From an enrollment of fewer than 200, students at the University of California now number over 98,700 of the brightest young people of the college generation. Nearly 85% are residents of California, with the remainder from other states and from 100 foreign countries. Nearly one third are studying at the graduate level.

Admission to the University is limited to graduates of California high schools in the top 12/12% of their classes; to graduates of out-of-state high schools in the top 614% of their classes; to students transferring from other colleges and universities whose academic records meet University requirements; and to graduate students with distinguished records. Admission requirements are uniform for the eight general campuses, and students may transfer from one to another.

These students come to the University with a tremendous range and variety of educational goals. They seek bachelor's, master's, and doctor's degrees in more than 100 fields of study, spanning the physical and biological sciences, social sciences, humanities, and arts. Many seek intensive professional education in such fields as architecture, engineering, law, medicine, public health, and social welfare, to name a few. In all cases, the University seeks to provide them the broadest and most complete education consistent with the demands of their prospective careers.

**Faculty and Instruction** The faculty of the University of California is noted for its unusually high number of Nobel laureates, National Academy of Science members, and holders of other notable awards for distinguished academic achievement. The men and women who teach courses at the University of California are exceptionally able scholars in their fields. They add to their knowledge of their subject by continuing research. They bring to the classroom the excitement of discovery, whether the class is a seminar of nine students or a lecture hall of several hundred. The faculty places a strong emphasis on the relationship between teacher and student. While seeking to meet the growing demand which our society places upon the University for advanced research and other academic services, the faculty holds firmly to its traditional role as educators of the young. Classes are as small as possible—about 70% of instruction is carried on in groups of 25 or less—and students are encouraged to confer privately with instructors.

This GENERAL CATALOGUE, together with those of the other campuses of the University, embodies about 10,000 courses, covering the spectrum of man's knowledge. Students are given a considerable degree of freedom in choosing
their courses, although their colleges and departments, or schools, provide a broad framework of minimum general requirements and major requirements. The student plans his program with the aid of an adviser and normally chooses a field of concentration by his junior year.

The academic year 1966–67 marked the transition from the semester system of operation to the quarter system. With the academic year divided into four equal quarters, faculty and students are able to make more effective use of their time. Courses are generally shorter and more concentrated than before; students may take fewer courses per quarter and devote more time to each course.

Research The distinction of the University's faculty has already been noted. The University is also known for the quality and scope of its research facilities. Each campus maintains research units, including laboratories, museums, centers, and institutes—covering most of the broad fields of study. There are also research stations, field stations, and other facilities of research in more than 80 locations throughout California. Continuing research is financed by University funds, private endowments, and grants from the federal and State governments. These funds provide research fellowships and assistantships for faculty and outstanding graduate students.

The libraries of the University are a valuable resource to research and instruction. The major collections are at the Los Angeles campus, with more than 2,500,000 volumes, and at the Berkeley campus, with more than 3,475,000. The other campuses also maintain extensive library collections. Altogether, the University libraries cover virtually every research need. To minimize duplication, each campus has developed a specialized concentration of volumes. Interlibrary loans are arranged with ease.

Administration Organization and government of the University is entrusted, under the State Constitution, to a corporate body, The Regents of the University of California. The Board of Regents is composed of twenty-four members, sixteen appointed by the Governor of California for sixteen-year terms and eight who are members because of the public offices they hold. These ex officio members are: the Governor, the Lieutenant Governor, the Speaker of the Assembly, the President of the State Board of Agriculture, the President of the Mechanics Institute, the President of the Alumni Association, the State Superintendent of Public Instruction, and the President of the University. The Regents have "full powers of organization and government, subject only to such legislative controls as may be necessary to insure compliance with the terms of the endowments of the University and the security of its funds."

The President of the University is the executive head of the University in all its departments and on all its campuses. He is appointed by The Regents and is directly responsible to them. Each of the nine campuses of the University has a Chancellor as its chief administrative officer. The Chancellor is responsible for the organization and operation of the campus, including academic, student, and business affairs. The President has delegated additional authority to the Chancellors, including appointment of faculty, department chairmen, directors of local instructional or organized research units, and certain other personnel.

The Academic Senate, consisting of the faculty and certain administrative
INTRODUCTION

officers, participates in the administration of academic matters. The Senate determines conditions for admission of students and for granting of certificates and degrees. It authorizes and supervises all courses in the schools and colleges.

University Extension University Extension makes available a broad range of programs based on the following educational aims: (1) the intellectual and cultural development of adults; (2) the dissemination of new knowledge resulting from teaching and research activities within the University; (3) the continuing education of scientific, technical, and professional personnel; (4) the development of special educational programs for public and private organizations and agencies; and (5) public affairs education through programs designed to aid adults in meeting their responsibilities as citizens.

The Berkeley Campus

The Berkeley campus is surrounded by the business and residential districts of Berkeley (population, 121,000), at the foot of the wooded Berkeley hills. Despite a rapid and intensive construction program, the campus retains the pleasant atmosphere of a park, with wooded glens, spacious plazas, and picturesque Strawberry Creek running westward through the length of the campus. The Berkeley Hills afford a panoramic view of the San Francisco Bay Area, a nine-county region widely acclaimed for its cultural activities.

One is impressed by the vitality of the campus. Political tables and noontime speeches that make news are, of course, part of the story. A host of other features—public lectures and concerts; campus-sponsored forums and seminars; clubs and workshops; dramatic presentations; international folk-dance festivals; art, photographic, design, architectural, anthropological, and archaeological exhibits and displays; recitals; lectures and more than twenty bookstores within one square mile—all of these make Berkeley what it is. In this environment, scholars of all ages gather to share ideas, information, and experience in a mood of exchange, toleration, and creativity.

Enrollment at Berkeley has reached its limit of 27,500, including 17,000 undergraduates. About 3,200 students live in University residence halls, and the remainder in privately owned or cooperative housing, or fraternities and sororities. There are more than eighty academic departments, and most offer instruction at both the undergraduate and graduate levels.

Many changes are taking place on the Berkeley campus: ivy-covered classic buildings share ground with modern steel and glass designs; the Venetian-style Campanile at the center of the campus, long a landmark of the West, now looks down upon a new landmark, the modern Student Center complex at the south entrance of the campus; the undergraduate lecture-hall session, long a part of the student's curriculum, now shares time with the seminar, preceptorial, and tutorial. Oldest of the nine campuses, the Berkeley campus is adapting to new needs and new trends, in an effort to make the experience of higher education one of the most exciting, meaningful, and thorough of human experiences.
I. Undergraduate Admission to the University*

Following is a brief description of the standard procedures of being admitted to the University in undergraduate status. Once admitted, a student will be interested in the procedures of registration and various aspects of student life (covered in the next chapter). Complete details concerning admission are given in the UNDERGRADUATE ADMISSIONS CIRCULAR, available from the Office of Admissions and sent automatically to each applicant. Please remember that an individual college, school, or department may have additional requirements, such as qualifying examinations, certificates of certain courses completed, placement tests, or interviews. For such details, consult the appropriate sections of this catalogue or the individual Announcements published in booklet format by each school and college.

Undergraduate Admission Procedures

**Filing the Application** Application packets, containing all necessary forms and instructions are available from the Office of Admissions, 127 Sproul Hall. This office accepts completed applications during the following periods:

- **Fall Quarter:** October 1 through March 1
- **Winter Quarter:** May 1 through November 1
- **Spring Quarter:** August 1 through February 1
- **Summer Quarter:** December 1 through May 1

New Undergraduate admission requirements are uniform on all campuses of the University. Admission to the University of California entitles the student to attend the campus of his choice if facilities are available. If the number of qualified applicants to one campus exceeds the number of places available on that campus, priority in assigning places will be based in part on the order in which applications are requested and received. An applicant should apply to only one campus since applications will be processed in one Office of Admissions only. Instructions for changing campus preference after the application is filed will be included with the application packet. Applicants are strongly advised to apply early in the filing period.

**Application Fee** An applicant must include with his completed application forms, a fee of $10 (not refundable). This fee may be submitted as check or money order payable to The Regents of the University of California.

**Transcript of Record** The applicant must also explicitly request his high school, and each college attended, to send the Office of Admissions an official transcript of his academic record, showing courses and grades. For applicants to freshman standing not yet graduated from high school, the transcript should include all work completed through the sixth semester (eleventh grade) and should list both

* For graduate admissions information, see Chapter III.
current and planned high school courses. For applicants to *advanced standing*, an official transcript from the graduating high school as well as transcripts from all colleges attended are required. The college transcript should show good standing or honorable withdrawal.

For all applicants, preliminary transcripts should show work in progress. Final transcripts, including an official statement of graduation or withdrawal, must be sent later. Transcripts submitted become property of the University and are not returned.

**Notification of Admission**  The length of time before notification may vary for each applicant, and delay should not cause concern.

Each student admitted receives a Statement of Intention to Register form, which he must complete and return with a nonrefundable fee of $50. If he registers in the quarter he applied for, this fee will be credited to the university registration fee.

**Reapplication**  Applicants who, because of ineligibility or change of plans, do not register, and who wish to attend the University in a later quarter, must then file a new application (with the $10 fee). This application will be considered anew according to admission requirements in effect and the space available on the campus.

**Subject A: English Composition**  Every undergraduate student must demonstrate an appropriate level of ability in English Composition. This requirement (Subject A) may be satisfied by:

1. Achieving a grade of 5, 4, or 3 in the Advanced Placement Examination in English given by the College Entrance Examination Board (CEEB).

OR 2. Achieving a score of 550 or above in the College Entrance Examination Board Achievement Test in English Composition.

OR 3. Achieving an acceptable score in the College Entrance Examination Board College-Level General Examination in English.

OR 4. Completing an acceptable college-level course of 4 quarter units or 3 semester units in English Composition with a grade of C or better.

If the applicant does not meet the requirement by one of the above ways, he must enroll in the course in Subject A. Further details are available from high school counselors or from the Subject A Office, 216 Dwinelle Hall Annex. The Subject A requirement is discussed more fully in the next chapter.

**Medical Information**  See Chapter II, page 23.

**Freshman Admission Requirements for California Residents**

Every applicant to the University is required to present evidence of his aptitude for University work. This includes both a high quality of scholarship and a background in specified subjects believed essential to higher education. With few exceptions, the better an applicant's preparation, the better his chances of success in University work, and the greater his freedom in choosing a field of specialization.
The following are the general requirements which California residents must meet. Those who plan to prepare for a specific major or curriculum—for example, chemistry, or engineering—are advised to investigate additional requirements as early as possible. These are set forth in brochures issued by individual departments, and in the Announcements of the colleges and schools.

Freshman admission requirements apply to those applicants who, have not taken any courses at a collegiate institution since graduation from high school. All others should familiarize themselves with the requirements for admission in advanced standing, described on page 19.

**High School Graduation**  An official statement of graduation from high school is required, and the high school must be determined by the University as acceptable.

**Preparatory High School Subjects**  In order to meet these subject requirements, the courses offered in satisfaction thereof must be included on the certified list submitted to the Director of Admissions of the University by the high school principal if the school is located in California. This list must be certified by the principal to the effect that the courses included thereon meet the requirements for admission to the University, and must have been approved by the Director of Admissions of the University. If the high school is not located in California, the Office of Admissions will determine whether or not the courses are equivalent. The following subjects are required (note that one unit of high school work normally implies a one-year course that meets five times a week):

(a) **History**, 1 unit (refers to United States History; may include ½ unit of civics or American government)

(b) **English**, 3 units (including composition, literature, and oral expression)

(c) **Mathematics**, 2 units (including such subjects as: elementary algebra, intermediate and advanced algebra, geometry, trigonometry, calculus, elementary functions, matrix algebra, probability, statistics, or courses combining these topics. Arithmetic and such nonacademic subjects as shop or business mathematics are not acceptable)

(d) **Laboratory science**, 1 unit (an eleventh or twelfth grade year-course, both semesters in the same subject field)

(e) **Foreign language**, 2 units (this must be in one language. Any foreign language with a written literature is acceptable; remember that a student’s major or curriculum may specify a language requirement, which he should try to satisfy while in high school).

(f) **Advanced course**, 1 to 2 units, consisting of at least one of the following:
- **Advanced mathematics**, 1 unit in addition to the courses offered under the mathematics requirement.
- **Foreign language**, either an additional unit of the same language offered under the language requirement, or 2 units of a second foreign language.

Science, 1 unit of chemistry or physics in addition to the course offered under the science requirement.

**Additional electives** (to complete, together with the above, a minimum total of 15 entrance units).

**Grade-Point Average**  At least a B average (3.0 on the University’s 4-point system) is required in the courses taken after the ninth grade that are used to meet
the above requirements. Grades in elective courses are not to be included in the grade-point average. A subject requirement is satisfied only by those courses for which a C or higher is received. In determining the B average, a grade of A in one course may be used to balance a C in another. Grades of D, E, or F may not be balanced by a higher grade.

One must repeat a course in which a D, E, or F was received in order to receive credit for satisfaction of a subject requirement and may also repeat any course taken after the ninth grade in which a D, E, or F was received to improve scholarship. However, no more than one unit of repetition will be allowed and grades earned in such repetitions will not be counted higher than a C in determining the scholarship average.

**Examination Requirement**  As a requirement for admission, all freshmen applicants (and advanced standing applicants who have earned less than 12 units of college credit subsequent to high school graduation) must submit scores from the following examinations of the College Entrance Examination Board taken no earlier than the last half of the junior year: (1) The Scholastic Aptitude Test (The verbal and mathematics scores submitted must be from the same sitting); (2) Three Achievement Tests, which must include: (a) English composition, (b) social studies or foreign language, (c) mathematics or science.

Applicants who are California residents and whose scholarship average in the required high school subjects is 3.00 to 3.09 inclusive must achieve a minimum total score of 2500 on the examinations. The test results of all applicants will be used for the purposes of counseling, guidance placement, and when possible, in satisfaction of the Subject A requirement.

The tests should be taken after completion of the first half of the eleventh grade. The verbal and mathematics scores on the Scholastic Aptitude Test must be from the same test session.

For arrangements to take the tests, see below.

**Admission by Examination Alone** An applicant who is ineligible for admission to freshman standing and who has not attempted college work subsequent to high school (except during the summer session immediately following high school graduation) may qualify for admission by examination alone. For admission of nonresident applicants by this method see page 19.

To qualify, the applicant who is ineligible for admission must take the examinations required of eligible applicants, but must achieve higher scores. The required minimum total score on the Scholastic Aptitude Test is 1100. On the three Achievement Tests the required minimum total score is 1650 for California residents with no score less than 500 on any one test. Nonresident applicants must have a total score of 1725 or higher. See page 19.

Applicants for the fall quarter are urged to take the required examinations as early as possible. Tests should be taken no later than January of the senior year.

Arrangements to take the tests should be made with the Educational Testing Service, P.O. Box 1025, Berkeley, California 94701, or P.O. Box 592, Princeton

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*Except from schools that give only year grades, the University considers grades on a semester basis. Grades in accelerated or honors courses are counted at face value.*
New Jersey 08540. The fees are to be paid to the Educational Testing Service. Scores will be regarded as official only if they are received by the Office of Admissions directly from the Educational Testing Service.

<table>
<thead>
<tr>
<th>Test Dates</th>
<th>Closing Dates</th>
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<tbody>
<tr>
<td>July 12, 1969</td>
<td>June 28, 1969</td>
</tr>
<tr>
<td>November 1, 1969 (S.A.T. only)</td>
<td>October 15, 1969</td>
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<tr>
<td>December 6, 1969</td>
<td>November 19, 1969</td>
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<td>January 10, 1970</td>
<td>December 24, 1969</td>
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<tr>
<td>March 7, 1970</td>
<td>February 18, 1970</td>
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<tr>
<td>May 2, 1970</td>
<td>April 15, 1970</td>
</tr>
<tr>
<td>July 11, 1970</td>
<td>June 24, 1970</td>
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</tbody>
</table>

Subject or Grade Deficiencies In some cases, admission is possible with minor deficiencies in either subjects or grades. The authority for these allowances is vested in the Admissions Officers. Usually, an applicant must demonstrate an unusual academic record or present exceptional recommendations.

Admission Requirements for Nonresident Freshmen

The University is currently obliged, because of limited facilities and expanding enrollment, to place some limitation on undergraduate enrollment of nonresidents of California. Of those eligible, only those of exceptional promise are selected. Thus, admission requirements for nonresidents differ from those for residents as follows:

- The high school grade-point average must be 3.4 or higher.
- Subject and examination requirements, as well as all other admission procedures, are the same as for California residents.
- Those who seek to qualify by examination alone must present a score of 1100 on the Scholastic Aptitude Test and at least 1725 on all three Achievement Tests (not less than 500 on each.)

For admission requirements for applicants from foreign countries, see page 21.

Admission in Advanced Standing for California Residents

Those who have registered since high school graduation at any collegiate institution, including junior colleges, summer school, or extension courses, must apply for admission in advanced standing. An applicant may not disregard his previous college record and apply as a freshman. However, an advanced standing applicant who has earned less than 12 units of college credit subsequent to high school graduation must satisfy the examination requirement for freshmen applicants described above. Regulations applying to admission in advanced standing are as follows:

- Those eligible for admission from high school, but who attended another collegiate institution, must present from that institution a statement of good standing and a grade-point average of 2.0.
- Those ineligible for admission from high school because of subject deficiencies may establish eligibility by taking, at an accredited college, the required courses, and by maintaining an average of 2.0.
- Those ineligible for admission from high school because of grade-point deficiency,
may establish eligibility by taking, at an accredited college, a minimum of 56 acceptable semester units or 84 quarter units, with an average of 2.4 or better.

Subject deficiencies of not more than 2 units may be waived for those who present the 56 or more semester units (or 84 quarter units) and the 2.4 grade-point average mentioned above. Deficiencies in excess of 2 units must be satisfied. Any high school subject requirements must be satisfied by appropriate college course.

**Admission in Advanced Standing for Nonresidents**  The admission requirements for nonresidents differ from those for residents in that the required grade-point average is 2.8 rather than 2.0. Admissions procedures and all other requirements are the same as for California residents described above.

**Entry Via Other Schools**  As indicated above, the conditions for entry to the University may be met by establishing a good record at another collegiate institution. Applicants are encouraged to investigate the University-preparatory programs offered by the many fine junior colleges throughout California. The University grants full unit value for approved transfer courses completed with satisfactory grades at any of these schools, up to 70 semester units or 105 quarter credits. However, extension courses taken elsewhere than the University may not be acceptable. The decision regarding the applicability of such course work in satisfaction of degree requirements rests with the faculty of the particular school or college in which the student plans to enroll. For further information, consult the Office of Admissions.

**Intercampus Transfer**  Those currently registered on any campus of the University in a regular session (or those previously registered who have not since registered at any other school) may apply for transfer to another campus by filing a form on their present campus—not on their proposed campus. This form must be obtained and filed at the Office of Admissions. The deadlines are the same as the admissions application deadlines given on page 2.

**Intercampus Visitor**  Students enrolled on one campus who wish to visit another campus for one quarter only may apply for an Intercampus Visitor application at the Office of the Registrar on the campus where they are currently enrolled. After the quarter is completed, the visitors return to their home campus as continuing students. The deadlines are the same as the admissions application deadlines given on page 2.

**Special Admission Circumstances**

Certain rules apply for special applicants not included above.

**Limited Status**  This includes applicants with a bachelor’s degree or with a substantial amount of college work completed with a satisfactory scholastic average, whose special attainment may lead them to take certain courses toward a definite and limited objective. Only applicants of unusual merit are considered. Applicants for admission in limited status will normally have to complete a personal interview with an Admissions Officer, who will determine, from the applicant’s record, his needs, and his plans, the conditions of his admission, subject to approval from the dean of the applicant’s college or school.

Admission is for a specified time, determined beforehand, and the student must maintain a prescribed scholastic average. There are no “special courses”;
the student will be admitted only to those courses for which he is able to demonstrate, in the opinion of the instructor, satisfactory preparation. Remember that many courses in engineering and professional fields require extensive, and often highly specialized, preparation.

The applicant must submit transcripts of records from all schools attended since the eighth grade.

**Special Status** This includes students of mature years (minimum age 21) who have not had the opportunity to complete a satisfactory high school program or have not completed a substantial amount of college work, whose special attainments may lead them to take certain college courses toward a definite and limited objective. Similar rules apply as for students in limited status, discussed above. Applicants to special status directly from high school are not accepted. One may not be admitted to special status for the purpose of making up requirements for admission to regular status.

**Work Toward a Second Bachelor's Degree** Ordinarily this is discouraged by the University, but complete changes in objective occasionally require the attainment of a second bachelor's degree. Applicants for admission to undergraduate study for a second bachelor's degree must indicate, by their previous scholastic record, a strong probability of academic success in such an undertaking. Admission is subject to approval of the Admissions Officer and of the dean of the college or school in which work is to be undertaken.

**Students from Other Countries**

Admission qualifications of a foreign applicant are evaluated in accordance with the general regulations governing admission. He should submit his application, with all official certificates and transcripts at the beginning of the appropriate filing period (given on page 2), to allow time for exchange of necessary correspondence and, if he is admitted, for obtaining the necessary passport visas.

**Engineering Students** A foreign applicant to the College of Engineering in freshman status must take the College Entrance Examination Board's Scholarship Aptitude Test, and three achievement tests: English composition, physics, and mathematics. Though he may be admitted to the University, a foreign applicant is not allowed to take courses in the College of Engineering without satisfactory scores on these examinations. To take these tests in his own country, an applicant should write to the Educational Testing Service. After the testing, he must request that his scores be forwarded to the Office of Admissions. A foreign applicant to the College of Engineering in advanced standing must take the Engineering Qualifying Examination. Arrangements to take this examination should be made with the Director of Admissions, University Hall, University of California, Berkeley, California 94720.

**Proficiency in English** A student from a non-English-speaking country must demonstrate proficiency in English by an examination given by the University. Failure to pass this examination will defer admission until the required proficiency is obtained. Applicants are urged to take the Test of English as a Foreign Language (TOEFL), administered by Educational Testing Service. This test, while not required for admission, is of considerable assistance to the Office of
Admissions, in evaluating the applicant. Scores from this test should be forwarded to the Office of Admissions.

Those whose language is other than English may receive college credit in their own language and its literature only for: (1) courses completed in their country at institutions of a college level; (2) upper division or graduate courses taken at the University of California.

Health Insurance Those not on permanent immigration visa must purchase health insurance. Further details about this insurance are given on page 66.

Foreign Student Adviser Foreign students are urged to visit the Adviser for Foreign Students, whose office is in International House, near the campus.
II. Procedures and Regulations for Undergraduates

For both new and continuing students, the first few weeks of the quarter carry the greatest number of problems. This chapter is an outline of the procedures encountered by most students in registering in the University, enrolling in courses, and completing work toward the degree. The sooner a student familiarizes himself with these details, the easier it will be for him to handle them smoothly and efficiently.

Registration and Enrollment

Registration Procedures  Registration is the means by which one officially becomes a student at the University. It includes the payment of registration and other fees (described in a later chapter), and the completion and filing of informational forms for various purposes. This is done by mail. New and reentering students receive information and instructions for registering by mail some time in advance of the quarter for which they have been admitted. The instructions include a mailing deadline which should be carefully observed. Registration in person at the opening of the quarter may involve a late registration fee of $10.

Late registration also increases a student’s difficulties in obtaining a suitable program of classes. He may not plead lateness as an excuse for neglecting assigned classwork—for which he is held accountable from the first day of classes. A student’s name is not entered on class rolls unless he completes registration according to the regulations. No student may register after the second week of classes.

Medical-Physical Examination Requirements  Students who are new to the Berkeley campus and those students returning after an absence of more than five years are required to have a medical examination. Students who have been accepted for admission are mailed medical examination appointments within the month prior to the opening of the new quarter. Appointments are not mailed to addresses outside the United States. Students who do not receive an appointment by the opening date of the quarter are advised to obtain one immediately at Window 104, Cowell Memorial Hospital. Medical examinations at the Health Service are given only during the first week of the fall quarter; for subsequent quarters, the examinations are held on the second Saturday following the beginning date of the quarter. The fee for failure to keep appointment is $10.

Students returning to the University after an absence of five years or less must report to Window 104, Cowell Memorial Hospital, for a required medical evaluation. Medical evaluations for students in this category begin a month before the opening of the quarter and continue through the first week of the quarter.

Reduced fee program students (new and returning only) are not required to complete a medical examination, but must report to Cowell Hospital, Window 104, for tuberculosis screening and smallpox vaccination clearance.

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Tests for tuberculosis are a part of the examination and evaluation of all new and returning students.

New students are required to have a smallpox vaccination within the past three years. Students should have the vaccination before coming to the campus. A charge will be made for vaccinations given at Cowell Hospital to complete the entrance requirement. International certificates, Armed Services immunization records, Public Health Department certificates and statements by private physicians are acceptable in lieu of the University form.

Registration at the University may be invalid without completion of medical examination requirements.

**Physical Education Orientation Meeting** Undergraduates registering for the first time are invited to attend this meeting conducted by the Department of Physical Education. Its purpose is to acquaint students with all course, intramural, intercollegiate, and recreational opportunities in sports and dance.

**Nonresident Tuition Fee** Students who have not been bona fide residents of California for more than one year immediately prior to the opening day of the quarter in which they register are charged, along with other fees, a tuition fee of $400 for the quarter. Legal residence (Government Code Section 244 and Education Code Sections 23054, 23055, and 23057, and the Standing Orders of the Regents) is the combination of physical presence and the intention of making the state one's permanent home. New and returning students are required to fill out a Statement of Legal Residence, a form that is issued upon registration. Their status is determined by the Attorney in Residence Matters, 590 University Hall, University of California, Berkeley 94720, or by his deputy in the Registrar's Office. All correspondence should be addressed to the Attorney, as he has the sole authority to determine residence classification.

The attention of the following students is directed to the fact that presence in California for more than one year does not, in itself, entitle them to resident classification: (1) those under 22, whose parents are not California residents; (2) veterans who were not California residents at the time of entry into the Armed Forces; (3) alien students who must first qualify for permanent residence status according to the applicable laws of the United States. Exemption from payment of the tuition fee may be granted to the unmarried minor whose parent is in the active military service of the United States and is stationed in California on the opening day of the quarter for which the minor registers.

Those classified incorrectly as residents are subject to reclassification as nonresidents. If incorrect classification resulted from false or concealed facts, the student is subject to University discipline and is required to pay all back fees he would have been charged as a nonresident. Resident students who become nonresidents must immediately notify the Attorney in Residence Matters or his deputy. Application for a change in classification with respect to a previous quarter is not received under any circumstances.

Part of the fees may be refunded to students who withdraw before the end of any quarter. A separate circular, **STUDENT FEES AND DEPOSITS**, gives information on refunds. This circular is available from the Registrar.
Conference with Faculty Adviser  A normal procedure for every University student is to confer with an adviser and obtain approval of a tentative program. The adviser will help the student make long-range plans for a major, and to prepare for graduate or professional study. He will discuss with the student the requirements of the University, his college or school, and his department. Students should see their advisers as early as possible in the established office hours during the period prior to the opening of classes. A student is strongly advised to go prepared: he should have at least a tentative idea of the courses he wishes to take, and should try to acquaint himself beforehand with course requirements.

Enrollment in Classes  A student should purchase from the Registrar's Office, for 25 cents, the Schedule and Directory, listing all courses given for the quarter, their credit values, instructors, hours, locations, and final examination groups. From this booklet, and with the aid of his adviser and the General Catalogue, which provides course descriptions and prerequisites, the student may assemble his program. He may not choose two courses in the same examination group. Usually courses in the same group meet at the same hour, thus precluding such a problem. He should try to construct two or three alternative programs, in case he is not admitted to the courses of his choice. Some courses are especially popular, and therefore difficult to enroll in.

Most courses merely require the student to attend the first class meeting, submit a prepunched enrollment card, received at the time of registration, and obtain a prepunched class card which is filed with the study list (see below). Unless subsequent enrollment problems occur, and provided that the student satisfies the instructor's prerequisites for admission, he is normally admitted.

Courses with restricted enrollment, or those likely to have an excessive number of applicants, have special advance enrollment procedures, which are described in detail on placards posted on campus bulletin boards at the end of the preceding quarter, and in the Schedule and Directory.

Filing the Study List  In order to complete his enrollment and receive credit for the work of a quarter, a student must file his study list at a time and place designated by the Registrar's Office. The study list must carry the approval of the student's adviser, although there may be exceptions in the College of Letters and Science, and (if his program is an exception to the normal unit load prescribed by his college or school) by the dean. Some colleges and schools require their dean's signature as a normal part of the study-list procedure. Filing dates are assigned according to the student's last name. The study-list form is included in the packet issued to the student upon registration, along with instructions for completing and filing it. The study list represents the student's final choice of courses, and constitutes his commitment to undertake the work of each course. Unapproved withdrawal from, or neglect of, a course entered on the list could result in disciplinary action. Any changes of program after filing the study list—whether to add, replace, or drop a course—must be made by formal petition with the signed approval of the instructor involved and the dean of the college or school. There is a fee of $10 for filing the study list after the assigned date. No study list is accepted after the third week of instruction.
Quarter Procedures

The Quarter System  The school year is divided into four equal quarters (replacing two semesters and two summer sessions under the old system), each quarter comprising ten weeks of instruction. Since the quarter is five weeks shorter than the old semester, the student will normally take fewer courses per quarter and devote more time to each course, although some departments may have exceptions to this pattern. Some two-semester sequences now occupy three quarters, although some are condensed to two quarters. A student making normal progress toward the bachelor’s degree will attend three quarters per year.

A student who completes a quarter, does not apply for an honorable dismissal or leave of absence, and is eligible to continue in the same status, may remain out of school for one quarter and resume his studies in the next session without submitting a formal application for readmission. A student desiring to accelerate his graduation, or to enrich his program of study, may attend all four quarters.

Courses and Units  All University courses (except Subject A and certain other courses) are assigned a unit value. One unit represents three hours of work per week by the student, including both class attendance and preparation. Laboratory, discussion, quiz, or review sessions may or may not be given unit value.

A student proceeding to the bachelor’s degree in four years (twelve quarters) will normally complete a total of 180 units, or 15 units per quarter. This number may be slightly higher in some professional colleges and schools. Students are normally considered to have upper division or junior standing after completion of 90 units.

Grades and Grade Points  Every student at the University will have his course work reported in terms of the following letter grades. Passing: A (excellent); B (good); C (fair); D (barely passing). Not passing: F (failure). Undetermined: incomplete, symbol I (student’s work of passing quality, but incomplete). Other symbols used: P (passed without definite grading at a level of performance corresponding to letter grade C– or better); S (satisfactory without definite grading); NP (not passed); U (unsatisfactory without definite grading); IP (in progress; final grade to be assigned upon completion of entire course sequence). For each unit of credit, grade A is assigned 4 grade points; B, 3 points; C, 2 points; D, 1 point; no grade points attach to other grades or symbols. The passing grades A, B, C, and D may be modified by plus (+) or minus (–) suffixes. “Minus” grades carry three-tenths grade point less per unit, and “plus” grades, three-tenths grade point more per unit, except for the A+ which carries 4.0 grade points per units as does the A.

The numerical values, or grade points, given above are intended to provide a more exact determination of a student’s scholarship. To compute the grade-point average for course work at the University of California, the point value of each grade is multiplied first by the unit value of the course to obtain a total of all grade points earned. That total is then divided by the total units undertaken, exclusive of courses in which P, S, NP, U, or IP were assigned. The resulting figure is the grade-point average.

Only courses for which grades D, F, or not passed were received may be repeated for credit—and not more than once, unless authorized by the appropriate
On course repetitions, the units are applied toward a degree only once, but the grade assigned at each enrollment shall be permanently recorded.

In computing the grade-point average of an undergraduate who repeats courses in which he received D or F, only the most recently earned grades and grade points shall be used for the first 16 units repeated. In the case of further repetitions, the grade-point average shall be based on all grades assigned and total units attempted.

To replace a grade of incomplete, a student must take an examination equivalent to the final examination, or complete any other assignment required by the instructor. On the instructor's recommendation and the permission of the dean of his college, school, or division, the student may receive grade points upon successful completion of the course. He must obtain, therefore, before finishing the work, the petition forms from the Registrar; secure the required endorsements; and file the petitions as directed. The fee for filing the petitions is $5, regardless of the number of courses entered. The foregoing procedures also apply to former grade E.

Minimum Scholarship Requirements. Failure to maintain a minimum grade-point average prescribed by the college or school will normally result in probation or dismissal. Computation of the grade-point average includes courses graded incomplete. Since scholarship rules are applied only at the close of regular sessions, grade points earned in a University of California summer session or by removing grade I are not taken into consideration until the close of the student's next quarter of attendance.

Probation

Except in the Colleges of Chemistry and Engineering, a student is placed on probation if his overall average falls below 2.0 at the end of any quarter. He will be removed from probation if he achieves the requisite 2.0 overall average by the end of the next quarter of attendance.

Dismissal

College of Chemistry and College of Engineering: a student is subject to dismissal if he falls below a 2.0 average, both for all work undertaken and for the work of each quarter.

College of Agricultural Sciences, College of Letters and Science, and School of Business Administration: a student is subject to dismissal (1) if his grade-point average for the work of any quarter falls below 1.5; (2) if while on probation his grade-point average for the work undertaken in any quarter falls below 2.0; (3) if after two quarters of probationary status he has not made up his entire grade-point deficit.

All other colleges and schools: a student is subject to dismissal (1) if his grade-point average for the work of any quarter falls below 1.5; (2) if after one quarter of probationary status he has not made up his entire grade-point deficit.

A dismissed student may appeal, by formal petition to the dean of his college or school, for a hearing, but the action of dismissal is normally considered final. A dismissed student who wishes to transfer to another college or school at Berkeley may petition the dean of the jurisdiction sought.
Honors  Standards for honors status are set by the colleges and schools, and departments may, in addition, recommend students for inclusion on the Honors List. Honor students are usually accorded special privileges, including eligibility for honors programs. Students with an overall grade-point average of 3.5 are accorded, through the Committee on Prizes, access to the Main Library loan stacks. For details on honors, please consult the college, school, or department.

Midterm and Final Examinations  The number of midterm examinations varies at the discretion of the instructor. Final examinations, however, are mandatory in undergraduate courses, with the following exceptions:

At the beginning of the quarters, the Schedule and Directory lists some courses as not requiring a final examination. These are laboratory, honors or special study courses.

If a student who is to be graduated at the end of the quarter is being examined in the field of his major by his department, he may, at the department’s discretion, be excused from final examinations in all courses taken within the department.

Year courses in the School of Law may, at the end of each term, require an instructor’s progress report in lieu of a final examination.

Final examinations are normally in written form; they may or may not, at the instructor’s discretion, cover the entire course. Students may wish to inspect a file of sample examinations, listed by course, in the Reserve Book Room of the Library. Examinations in nonlaboratory courses may not exceed three hours. Any infringement by the student of rules of fair examination practice is considered a serious offense subject to discipline.

Reexaminations are permitted only for the purpose of raising grade I or E to passing, not to raise any other grade.

Course Credit by Examination  Under certain circumstances, a student who has maintained at least a B average in all University work undertaken is permitted to qualify for course credit by examination. This procedure applies to: (1) students of exceptional ability who have studied a subject on their own; (2) students with a background in a subject appropriate to their curriculum but not normally offered as a course; (3) students entering in advanced standing who were not granted transfer credit for certain courses until they passed examinations in the comparable courses at the University of California. Petitions are available from the Office of the Registrar. Final approval is required from the dean of the college or school, and from the instructor appointed to give the examination. Students of the third category must obtain approval from the Office of Admissions before filing the petition.

Passed or Not Passed Credit.  Effective with the fall quarter 1968, a student’s level of performance must correspond to letter grade C- or better if a passed grade is to be assigned.

An undergraduate may enroll in one course each quarter on a passed or not passed basis, including a course offered by the department solely on that basis. He must be in good standing (i.e., have at least a C average in all courses taken at the University). A course which is required in the student’s major or is prerequisite to the major may be taken on a passed or not passed basis only upon the approval of the faculty of his college or school. If the student is enrolled in Supervised Independent Study for Undergraduates (courses numbered 199),
STUDENT CONDUCT; ABSENCES

and that study is subdivided into portions under the supervision of separate instructors or in separate departments, the portions may separately be graded passed or not passed without this constituting a violation of the limitation of one course per quarter. Additional rules concerning enrollment in 199 courses will be found on page 145 of this catalogue.

The student may not enroll in further courses on a passed or not passed basis if he has twice failed to pass such courses.

An exception to these rules is permitted in that any student, graduate or undergraduate, whether in good standing or not, may elect in addition each term not more than one unit of half-unit “activities” courses in physical education and not more than one unit in half-unit Music 400-series “practice” courses. After a student has received a grade of not passed in two of these courses, he may not enroll in another half-unit course on a passed or not passed basis in the same department. The results of these courses are disregarded in ascertaining a student’s eligibility to undertake courses on a passed or not passed basis in courses of other departments and vice versa.

Any further exceptions require the approval of the dean of his school or college. The adviser or the dean should be consulted before a study listed is filed for such limitations and additional regulations that are applicable to the student.

Student Conduct and Discipline  A student enrolling in the University assumes an obligation to conduct himself in a manner compatible with the University’s function as an educational institution. Rules concerning student conduct, student organizations, use of University facilities, and related matters are set forth in both University policies and campus regulations, copies of which are available upon request at the Office of the Dean of Students, 201 Sproul Hall, and at the Information Desk in the Student Union. Particular attention is called to the booklet University of California Policies Relating to Students and Student Organizations, Use of University Facilities, and Non-Discrimination and to the Standard of Conduct set forth therein.

Absences and Withdrawals  Responsibility for short absences is largely left up to the student. For absences of five days or longer, the student must apply to the Dean of Students for a Leave of Absence.

Permission to withdraw entirely from the University, without scholarship penalty, is not usually granted after the first few weeks of the quarter, except under unusual circumstances over which a student has no control. If circumstances prevent further class attendance, a student should notify the Registrar in writing immediately. Upon written approval of the Dean of Students and also the dean of the college or school, honorable dismissal will be granted. One may also obtain, upon petition, honorable dismissal at the close of any quarter. Any withdrawal for reasons of health requires the endorsement of the Director of the Health Service, following review by the medical staff or the student’s private physician. One may not, under any circumstances, discontinue schoolwork without formal notice—this may result in dismissal and loss of eligibility for readmission.

Reentry after an Absence  A student who has been dismissed because of scholarship deficiency or disciplinary problems is generally not eligible for
readmission. A student who completes a quarter, does not apply for an honorable
dismissal, and is eligible to continue in the same status, may remain out of school
for one quarter and register for the following quarter without the necessity of
applying for readmission. A student who does formally withdraw, or who is
absent for more than one quarter, must file an Application for Readmission,
which may be obtained from the Office of the Registrar. A nontransferable,
nonrefundable Readmission Fee of ten dollars ($10) has been established effec-
tive with the spring quarter, 1969. This fee must accompany the Application
for Readmission when first submitted; the application cannot be considered until
the fee has been paid.

Declaration and Change of Major Regulations and procedures for declaring the
major vary for each college. A student may, at any time up to the last quarter of
residence, file a petition for a change of major. He must secure approval for this
action from the dean or other authorized person in the college or department to
which he is transferring.

Work Toward a Degree At the close of each quarter, the courses, units, grades,
and grade-points earned are added onto the student’s cumulative University
record. From this record, he may determine his progress toward a degree. Trans-
scripts of the records—useful, and usually necessary in applying to graduate
school and for certain types of employment—are available from the Registrar.

After the last date for final examinations, transcripts of record for registered
students must be held for the inclusion of grades for the quarter and, therefore,
may not be available for 10 to 15 working days. Partial transcripts will not be
issued. At times other than the close of the quarter, the normal period required
for the processing and issuance of transcripts for both registered and former
students is from three to four working days. The charge for each transcript of
every undergraduate, graduate or separate summer session record is $1, and
the total amount due must accompany the application.

In working toward a degree, the student should keep in mind the various
levels on which he is to satisfy requirements—University, college or school, and
department—as well as the types of requirements he must fulfill: course, unit,
grade point, and amount of upper division work. He may receive additional
counsel in these matters from his adviser.

Candidacy for a Degree A student who expects to be a candidate for a degree
must file an announcement of candidacy with the study list at the beginning of
the quarter in which he expects to complete the work for the degree. The
announcement is accepted no earlier than this period. Announcements filed late
are subject to a $3 late fee. The period for filing announcements ends with the
third week of classes. A candidate who for any reason does not meet the require-
ments for graduation must file a new announcement of candidacy in the period
for filing in the subsequent quarter when the degree will be awarded.

Of the final 45 units completed by each candidate for the bachelor’s degree,
35 units must be earned in residence in the college or school in which the de-
gree is to be taken. Not more than 18 of the 35 units may be completed in
summer session courses on the campus of residence. The candidate should
review the announcement of his college or school for details concerning this
general rule as it applies to the requirements for the bachelor's degree.

**Preparation for Graduate Study** Those preparing for study toward higher de­
 grees should learn, as early as possible, the entrance and degree requirements
of their graduate field, in order to include all prerequisite steps in the under­
graduate program. Further details about graduate study at Berkeley are given
in the next chapter.

**Two University Degree Requirements**

There are two requirements—beyond those set by the college, school, or
department—which all undergraduates registered in the University must satisfy
in order to graduate. These are considered essential to the student's education,
regardless of his academic or professional objectives.

**Subject A** This requirement is based on the principle that a University stu­
dent must demonstrate reasonable proficiency in English composition to suc­
cceed in college-level work. Satisfying the requirement is a prerequisite to many
courses, including all first-year composition courses. All University departments
assume that the student has mastered the elementary principles of composition
and can write with a minimum of gross errors in sentence structure, grammar,
punctuation, and spelling. The Subject A course is designed to help those stu­
dents who are deficient in composition.

A student entering as a freshman will have taken the English Composition
Test of the College Entrance Examination Board. If his score on this test is below
550, he must enroll in the course in Subject A during his first term of residence
at the University. This is a noncredit course for which a fee of $45 is charged.

An entering freshman may also meet the requirement by presenting a score
of 3, 4, or 5 on the College Board Advance Placement Test in English.

Any student may meet the requirement by presenting evidence of completion
of an acceptable college-level course in English composition taken at another
institution, provided the grade is C or better.

**American History and Institutions** These requirements are based on the prin­
ciple that an American student enrolled at an American university should have
some acquaintance with (1) the history, and (2) the government of his country.
These requirements may be met in the following six ways:

1. By passing two examinations, one in each of these subjects. All students
   who wish to take either or both examinations *must* fill out a form at the American
   History and Institutions Office, Room 204, Bldg. T-9. For details on these
   examinations, please consult that office.

2. By presenting official evidence of completion of the same two requirements
   at another college level institution in California.

3. By completing one quarter of a course in *each* of the two groups given be­
   low (or, on approval of the Supervisor of American History and Institutions and
   dean of the college or school at Berkeley, any comparable courses offered at an­
   other college level institution, or University Extension):

PROCEDURES AND REGULATIONS FOR UNDERGRADUATES


(2) Institutions Requirement: Political Science 1, 5, 33A, 33B, 33C, 110, 112, 113A, 113B, 157A, 157B, 157C; History 33A, 33B, 33C; English 33A, 33B, 33C. The normal course to satisfy this requirement for those other than Political Science majors will be Political Science 5.

4. By mixing alternatives 1, 2, or 3 for either requirement. A student may choose an examination in either one, or complete a course in either one, or submit evidence of equivalency for either one.

5. By completing the first two quarters of the Experimental College Program dealing with American Studies.

6. The American History part of the requirement can be fulfilled by passing the Advanced Placement Test in American History with a grade of 3, 4, or 5. No Advanced Placement Test exists at this time in American Institutions, so this part of the requirement cannot be fulfilled by this means.

The requirements will be waived for foreign students who, in the course of their registration, have submitted to the Registrar for inspection travel documents certifying that they hold student (F) or visitor (J) visas. Those who wish to verify that the waiver has been granted may call at the Office of the Registrar, 120 Sproul Hall, for confirmation, preferably no earlier than the close of their second quarter of attendance.

All students are advised that fulfillment of these requirements is the responsibility of the individual student, and preferably should be completed by the end of the junior year.

Students wishing to complete the requirements by enrolling in courses should check the American History and Institutions Office prior to enrollment for possible policy changes made after this catalogue was printed.

College and School Requirements

Every college and school has established a program of requirements for the degree, which may be in addition to those of a field of concentration. These requirements may include: (1) preparatory subject requirements for admission, in addition to University admission requirements stated in the previous chapter; (2) preparatory college-level courses for the student’s particular field of study—to be completed, if possible, during the student’s early period of residency in the college or school, or in some cases before entrance; (3) breadth requirements, that is, courses outside the field of study, considered essential to a well-rounded curriculum; (4) the credit requirement, which is a total number of units to be completed, with specifications of how these credits are to be distributed; and (5) a minimum scholarship requirement. The degree programs and general requirements of the colleges and schools are briefly summarized in Chapter V. Detailed information is given in the individual Announcements of the colleges and schools.

The Major and the Department

Every student must select a field of concentration, and pursue a major or curriculum, normally by taking a minimum number of units in one department or school. Occasionally—as, for example, with Business Administration, Optom-
etry, Criminology and others—the school and the department are synonymous. In some cases—as, for example, the humanities field major in the College of Letters and Science—a major may embrace more than one department.

All courses, as well as all majors administered under a single department, are listed by department in the course section of this catalogue.
Graduate study embraces all study for degrees and certificates beyond the bachelor's degree—principally the master's and doctor's degrees—and is administered by the Graduate Division under the policies and regulations established by the Graduate Council of the Berkeley Division, a standing committee of the Academic Senate. Higher degrees fall into two broad categories: (1) Professional—degrees awarded by each of the professional colleges and schools on the Berkeley campus in recognition of a candidate's command of a comprehensive body of professional knowledge and his ability to organize and carry out investigation of significant problems in his field. (2) Academic—degrees awarded by the academic departments, and some professional schools, in recognition of a candidate's command of a wide range of related subjects within an academic field, his preparation in one or more foreign languages, and his ability to pursue original research leading to a contribution of significant ideas to his field of study. For a list of graduate degrees offered, see page 54.

Admission to Graduate Study

Completed applications for admission, as well as all additional documents specified on the application form (including transcripts from each college-level institution previously attended), and a fee of $10, must be filed with the Graduate Admission/Fellowship Office by the established deadlines.

The final dates for acceptance of applications for admission for the 1969-70 academic year are: fall quarter, May 15; winter quarter, October 10; spring quarter, January 10; and summer quarter, April 5. The School of Law admits only for the fall term; the deadline is May 1.

A number of departments with heavy enrollments have established earlier final dates of their own, both with respect to admission and to financial assistance. Consequently, it is to a student's advantage to make early inquiry about application for study at Berkeley.

Admission Requirements The University requires of the applicant the following: (1) a valid degree from an accredited institution, comparable to the bachelor's degree offered at Berkeley; (2) sufficient undergraduate training to undertake graduate study in his chosen field; and (3) a satisfactory scholastic average. Since the methods of determining eligibility vary with each applicant, an extensive evaluation of his college records and supporting materials is necessary. A satisfactory score on the Graduate Record Examination (administered by the Educational Testing Service), though not required for admission to the Graduate Division, is recommended, and further, is required by some departments and schools on campus. If it is required, the score should be forwarded to the applicant's proposed school or department.

In addition to the general University requirements, certain schools or departments may require additional records, such as separate applications, reading
lists, examples of original work, or qualifying examinations. Information on undergraduate requirements for a major field and on graduate programs and requirements is available in the school or departmental announcements and bulletins, in Section II (Courses and Curricula) of this catalogue, and in the Graduate Division announcements on fields of graduate study (Biological Sciences; Physical Sciences; Social Sciences; Languages and Literatures and the Fine Arts).

**Notification of Admission** Only a written notice from the Graduate Division, not letters from departments or faculty, constitutes valid proof of admission. Notification is sent to the applicant after his records and supporting materials have been reviewed by both the Graduate Admission/Fellowship Office and the departmental selection committee. Normally this is four to six weeks after all the records and materials for the applicant's admission file have been received. It can take longer, however, depending upon the time of year and the meeting schedule of the selection committees.

**Reapplication** An applicant who changes his plans and withdraws his application from consideration for a particular quarter will have all of his materials kept on file for a maximum of two years following his first application. He may reapply for any quarter within the two years by notifying the Graduate Admission/Fellowship Office to reactivate his file prior to the application deadline date for that quarter and by providing a current application, if required, together with any records of academic work completed since he first applied. For application after the two-year limit, he will have to file a new application form (with the $10 fee) and supply a new set of records and supporting materials.

**Foreign Applicants** In addition to the admission requirements set forth previously, foreign students are expected to have an excellent command of English before beginning studies at Berkeley, since no student is admitted to the University for the purpose of learning English. Prior to arrival in Berkeley, and as a requirement for admission, applicants whose native language is not English must take either the Test of English as a Foreign Language (TOEFL), administered by the Educational Testing Service, or the test given by the American consular authorities abroad. Results must be forwarded to the Graduate Division Office. After arrival in Berkeley, these students must take the University Examination in English for Foreign Students, as indicated in the circular **INFORMATION FOR GRADUATE STUDENTS FROM OTHER COUNTRIES** sent to all foreign applicants.

A special course in English for Foreign Students is normally offered each year from mid-July to the end of August. Interested persons should write for information to the Office of the English Program for Foreign Students, 2241 College Avenue, University of California, Berkeley, California 94720.

**Accommodation of Postdoctoral Fellows and Visiting Scholars.** The University of California has always welcomed postdoctoral fellows and visiting scholars. A prospective fellow or scholar should communicate in advance of his arrival on campus with the chairman of the department, school, or research unit with which he wishes to be affiliated to determine whether the facilities he requires are available and whether he would be eligible for an honorary appointment.
Such appointments are subject to the final approval of the Dean of the Graduate Division.

**Intercampus Exchange Program** A graduate student registered on any campus of the University who wishes to go to another campus of the University may, with the approval of his adviser, the chairman of the department in which study is proposed, the Dean of the Graduate Division on his home campus, and the Dean of the Graduate Division on the campus visited, become an Intercampus Exchange Graduate Student. This program will also include those students who take courses on more than one campus of the University in the same quarter. Application forms for the Intercampus Exchange Program for Graduate Students may be obtained from the Office of the Dean of the Graduate Division on the student’s home campus.

It is anticipated that this privilege will be used by graduate students who seek the opportunity for association with certain scholars or with fields of study not available on their home campus, or who seek the use of special facilities and collections. Whenever possible, personal arrangements between faculty members on the two campuses should be made so as to insure that the courses, seminars, or facilities will be available to meet the student’s needs. This privilege will be granted where evidence of serious and high-quality scholarship is available.

Although he registers and pays fees on the home campus, the Intercampus Exchange Student will have library, infirmary, and other student privileges on the host campus. He should make arrangements with the Registrar to follow the enrollment procedures of the host campus so that grades obtained in courses he takes there will be transferred to his record on the home campus. An exchange student is considered a graduate student in residence on his home campus. He has not transferred his enrollment, and he is not admitted to the graduate school and department of his host campus as a graduate student of that campus. Unless specifically restricted, holders of fellowships may participate in the Intercampus Exchange Program.

**General Regulations and Procedures**

**Graduate Advisers** Each academic department, group, and professional school nominates to the Dean of the Graduate Division a graduate adviser, appointed by the Dean, whose name is announced before the opening of each quarter. The responsibilities of the graduate adviser include: (1) assisting graduate students in selecting a program of study toward a degree, (2) reporting to the Dean of the Graduate Division on the acceptability of upper division and graduate courses completed by a candidate at other institutions, (3) endorsing applications for candidacy for higher degrees and for qualifying examinations, (4) acting on petitions by graduate students, (5) maintaining records of all graduate students enrolled under his jurisdiction, (6) supplying information requested by the Dean of the Graduate Division regarding a student’s work and progress, and (7) assisting the Dean in the enforcement of all regulations applying to graduate study, particularly those relating to admission to graduate courses and maintenance of acceptable scholastic performance. The graduate adviser is the deputy of the Dean of the Graduate Division and the chief representative of the depart-
ment or school in all matters related to graduate study, and his signature is recognized as expressing their official decisions. All graduate students must confer with their graduate advisers at the opening of each quarter and obtain approval of their programs of study.

**Adviser for Foreign Students** Foreign students must consult with the Foreign Student Adviser at International House as soon as possible after arrival in Berkeley. He will provide assistance in problems concerning finances, visas, passports, work permits, transfer of funds from abroad, and local and national regulations affecting foreign students.

**Registration** Graduate students may attend all four quarters of an academic year at their own option and with the formal consent of their Graduate Adviser. However, mandatory year-round attendance is precluded. The requirement of full-time continuous registration for graduate students is therefore satisfied by attendance in any three quarters of an academic year. These quarters need not be consecutive. Accordingly, with the formal consent of their adviser, graduate students may fulfill the requirement of full-time continuous registration by substituting attendance in the summer quarter for attendance in the fall, winter, or spring quarters. It is not necessary that a formal leave of absence be obtained for the one quarter in each academic year during which a student is not registered.

Consistent with these principles, graduate students must register in any quarter in which they are enrolled in formal courses of instruction, and they are, of course, subject to all regular fees.

If a student's studies or research require him to remain outside the State of California for the quarter, he must file a petition for this, including a request for reduction of the incidental fee, with the Office of the Dean of the Graduate Division.

**Student Conduct and Discipline** A student enrolling in the University assumes an obligation to conduct himself in a manner compatible with the University's function as an educational institution. Rules concerning student conduct, student organizations, use of University facilities, and related matters are set forth in both University policies and campus regulations, copies of which are available upon request at the Office of the Dean of Students, 201 Sproul Hall, and at the Information Desk in the Student Union. Particular attention is called to the booklet *University of California Policies Relating to Students and Student Organizations, Use of University Facilities, and Non-Discrimination* and to the Standard of Conduct set forth therein.

**Leave of Absence and Withdrawal** If a student wishes to withdraw from the University for a period of more than one quarter, or if he finds it necessary to discontinue his studies before the close of the quarter, he must apply for a leave of absence. Petitions for this purpose are available from the Office of the Dean of the Graduate Division, and are filed with the same office. During his absence, a graduate student is exempt from all fees, and is expected in turn to maintain no connection with the University—he may not use University facilities or place demands on faculty time.

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* See the next chapter.
Readmission
A student who completes a quarter, does not apply for an honorable dismissal, and is eligible to continue in the same status, may remain out of school for one quarter and register for the following quarter without the necessity of applying for readmission. A student who does formally withdraw, or who is absent for more than one quarter, must file an Application for Readmission, which may be obtained from the Office of the Registrar, and must pay a nontransferable, nonrefundable Readmission Fee of ten dollars ($10). This fee, which became effective with the spring quarter 1969, must accompany the Application for Readmission when first submitted; the application cannot be considered until the fee has been paid.

Any leave of absence is a privilege requiring the endorsement of the student’s department or school and the Dean of the Graduate Division. Students who plan to leave the campus permanently should apply for honorable dismissal.

Medical-Physical Examination Requirements
Students who are new to the Berkeley campus and those students returning after an absence of more than five years are required to have a medical examination. Examinations by private physicians must be within a month of the opening date of the quarter. Students who have been accepted for admission are mailed medical examination appointments within the month prior to the opening of the new quarter. Appointments, however, are not mailed to addresses outside the United States. Students who do not receive an appointment by the opening date of the quarter are advised to obtain one immediately at Window 104, Cowell Memorial Hospital. Medical examinations at the Health Service begin the week prior to the opening of the fall quarter; for subsequent quarters, the examinations are held on the second Saturday following the beginning date of the quarter. The fee for failure to keep an appointment is $10.

Students returning to the University after an absence of five years or less must report to Window 104, Cowell Memorial Hospital for a required medical evaluation. Medical evaluations for students in this category begin a month before the opening of the quarter and continue through the first week of the quarter.

Reduced fee program students* (new and returning only) are not required to complete a medical examination, but must report to Cowell Hospital, Window 104, for tuberculosis screening and smallpox vaccination clearance.

Tests for tuberculosis are a part of the examination and evaluation of all new and returning students.

A smallpox vaccination within the past three years is required, and should be obtained by students before they come to the campus. A charge will be made for vaccinations given at Cowell Hospital to complete the entrance requirement. International Certificates, Armed Services immunization records, Public Health Department certificates and statements by private physicians are acceptable in lieu of the University form.

Registration at the University may be invalid without completion of medical examination or evaluation requirements.

* This regulation does not apply to advanced graduate students who have secured permission to pay the University Registration Fee while residing outside the State of California for an entire quarter.
All students who have paid the registration fee are eligible for health service from the first day of the quarter in which they register to the last day of the quarter, or to the date of official withdrawal if they withdraw prior to the end of a quarter. Following verification of academic status by the departments concerned, continuing graduate students who are not registered but are working toward an advanced degree may become eligible for care by paying the Student Health Service fee (deadline: tenth day of classes each quarter.)

**California Legal Residence**  California state laws define legal residence as physical presence in the state with the intention of remaining indefinitely. To be considered for classification as a legal resident, a graduate student must meet this condition for at least one year immediately preceding the quarter in which he registers. Nonresidents must pay a tuition fee for each quarter. Those in doubt about their status should consult the person in charge of residence matters in the Office of the Registrar, or write: Attorney for The Regents in Residence Matters, 590 University Hall, University of California, Berkeley, California 94720.

**Academic Residence**  In order to meet the academic residence requirement for higher degrees—not to be confused with state residence, defined above—every graduate student must enroll in and complete a minimum of 4 units of upper division and/or graduate courses per quarter (courses in the 100 or 200 series).

**The Study List and Study-List Limits**  Each quarter in which he registers the student fills out a study list, entering on it all courses or any other graduate work, including thesis and/or research approved by the graduate adviser, to be undertaken for the quarter.

Courses are classified as lower division (numbered from 1 through 99); upper division (100–199); and graduate (200–299). Lower division courses are not counted as part of a full program of study leading to a higher degree. (For information on courses in the "600-series" see Standard of Scholarship on page 40.)

Teaching assistants and research assistants must normally carry a minimum of 6 units of upper division or graduate work. Fellowship holders, foreign students on nonimmigrant visas, and students subject to selective service regulations must carry a full program of study, the minimum range in such cases being from 8 to 12 units in upper division and/or graduate courses, although cognizance is taken of the amount of individual study being pursued in the form of language preparation, comprehensive and qualifying examination preparation, etc., for the Ph.D. degree. In these cases reduced unit loads are accepted as full programs with the consent of the faculty adviser and dean. For the convenience of students, a table of maximum programs is given on next page.

**Changes in the Study List**  Graduate students may file petitions to add, substitute, or drop courses entered on their study lists at any time through the twentieth day of instruction. Discontinuance of a course after this time will normally result in a grade of F. In unusual circumstances, and when approved upon petition to the Dean of the Graduate Division, the penalty of an F grade may not be assessed.
The Nature of Graduate Instruction  

A graduate course is a highly advanced course in a field of study already intensively presented in the upper division. Graduate courses demand, on the part of both instructor and student, either a capacity for critical analysis or a specialization of research interests not normally appropriate to an undergraduate major. These courses may be conducted in a number of ways: (1) as advanced lecture courses, (2) as seminars in which faculty and students present critical studies of selected problems within the subject field, (3) as independent study or reading courses, or (4) as research projects conducted under faculty supervision. The main purpose of graduate study is to inspire independence and originality of thought in the pursuit of knowledge. The graduate student is expected to achieve mastery of his chosen field, through advanced course work, and—equally important—through independent study and research. He is accorded considerable liberty in his choice of courses as long as he meets the minimum requirements for academic residence.

Possession of a bachelor’s degree does not in itself entitle a student to enroll in a graduate course. These courses assume adequate preparation at the upper division level in the subject field (a minimum of 18 units of upper division work basic to the subject matter of the graduate course; this basic work may be pursued in more than one department). Graduate students are encouraged, therefore, to take any upper division work that will provide them with the background needed for advanced work; they are not confined to graduate courses.

Graduate courses completed before attainment of the bachelor’s degree are not acceptable toward an advanced degree. Courses in the 300 and 400 series, which are professional in nature, are designed to meet the requirements for the various certificates, and are not acceptable as part of the program for an academic degree.

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<tr>
<th>Maximum Program</th>
<th>Maximum Program for Teaching Assistants and Research Assistants</th>
<th>Maximum Program for Persons Employed Full Time</th>
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<tr>
<td>Graduate units</td>
<td>Upper Division units</td>
<td>Total units</td>
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Duplication of Higher Degrees  Duplication of the M.A. and M.S. degrees, in any field of study, is permitted only in the most exceptional circumstances.

Degrees for Members of the Academic Senate  A voting member of the Academic Senate may be recommended for a higher degree by a Senate Division of which he is not a member, provided that he has fulfilled all the requirements of that Division.

No voting member may be recommended for a higher degree by his own division unless, prior to the date of final action on his appointment to a rank carrying the voting privilege, the Dean of his Division has certified to the appropriate authority that he has met all the requirements for the degree. Such appointments may be retroactive.

University Extension

No courses taken in University Extension may be applied toward a higher degree administered by the Graduate Division at Berkeley. Requirements for the Standard Teaching Credential may be met in part, however, by courses offered in University Extension. (See the Announcement of the School of Education.)

The Master's Degree

Instruction is offered on the Berkeley campus leading to the following master's degrees:

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<tr>
<th>Academic</th>
<th>Professional Master's Degrees in</th>
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<td>Master of Arts (M.A.)</td>
<td>Architecture (M. Arch.)</td>
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<tr>
<td>Master of Science (M.S.)</td>
<td>Bioradiology (M. Biorad.)</td>
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<tr>
<td>Master of Fine Arts (M.F.A.)</td>
<td>Business Administration (M.B.A.)</td>
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<td></td>
<td>City Planning (M.C.P.)</td>
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<td></td>
<td>Criminology (M. Crim.)</td>
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|                                  | Engineering (M. Eng.)            |
|                                  | Forestry (M. F.)                 |
|                                  | Journalism (M.J.)                |
|                                  | Landscape Architecture (M.L.A.)   |
|                                  | Law (LL. M.)†                    |
|                                  | Library Science (M.L.S.)         |
|                                  | Public Health (M.P.H.)           |
|                                  | Social Welfare (M.S.W.)          |

Specific regulations governing the professional master's degrees are set forth in the individual Announcements of the colleges and schools. The present section will deal primarily with the academic master's degree, though the rules and procedures described will be of interest to candidates in all fields.

Preparation  Normally a bachelor's degree comparable to that offered at the University of California—with an undergraduate major either in the field of graduate study or a closely related field—is considered as acceptable preliminary training for study toward a master's degree. The applicant's undergraduate program of study must be approved as a sufficient foundation for advanced work by the graduate adviser in the student's proposed field of study. The applicant's scholastic record must also be of acceptable standard.

Residence Requirement  A minimum of three quarters of academic residence (as defined earlier under Academic Residence) is required for the master's degree. Specific subject requirements are set by the schools and departments.

† Application for admission is made both to the Graduate Division and the School of Law.
Transfer of Credit from Other Institutions  Up to 6 quarter units (or 4 semester units) of courses taken at other institutions may be applied toward the degree, upon approval of the Dean of the Graduate Division. These units are allowed if earned in graduate status at an institution of high standing, * but they cannot be used to reduce the minimum residence requirement or minimum requirement of graduate-level units. Requests for degree credit for such courses are not considered until a student has completed at least one half of the program for the master's degree and is applying for advancement to candidacy. The student's entire record must indicate superior scholarship.

Course Credit by Examination  A student in residence may receive a limited amount of course credit toward his degree by passing examinations on material covered in certain courses in lieu of taking those courses. Laboratory courses or graduate seminar or research courses are excluded. Approval to take such examinations must be given by the Dean of the Graduate Division and by the instructor, or, where no instructor is designated, by the departmental chairman.

Standard of Scholarship  Every graduate student must maintain a minimum grade-point average of B (3.0) for all work undertaken in graduate status. Only courses graded A, B, C (with or without affixes), or P are accepted in satisfaction of degree requirements. No more than 9 units graded Pass may be used as part of the unit requirement for the master’s degree, and then only if approved by the department. † Courses graded below C- do not yield unit credit toward a higher degree irrespective of the overall grade-point average.

For a course extending over more than one quarter, where evaluation of the student's performance is deferred until the end of the final quarter, provisional grades of in progress (IP) are assigned in the intervening quarters. The provisional grades are replaced by the final grade if the student completes the full sequence. If the full sequence is not completed, the Berkeley Division of the Academic Senate is authorized to regulate the award of credit.

With the consent of the department involved, individual study and research, or other individual graduate work undertaken by a graduate student, may be evaluated by means of the grades satisfactory and unsatisfactory (S and U). Such courses are numbered in the “600 series” and do not count toward academic residence or the unit requirement for a higher degree. No credit will be allowed for work graded unsatisfactory.

Disqualification on grounds of poor scholarship is at the discretion of the Dean of the Graduate Division.

Amount and Distribution of Work  Students working for academic master's degrees on the Berkeley campus will pursue one of two plans, as determined by the individual department (departments may adopt either or both plans, and will, in the latter case, designate which plan is to be followed by each student):

Plan I requires 30 quarter units and a thesis. At least 12 of these units must be in graduate courses (200 series) in the major subject. Course units are not granted for the thesis.

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* Credit for graduate work completed on other campuses of the University of California may be granted in excess of 6 units. Requests are handled on an individual basis.
† For further information on grades and grade points see Chapter II.
Plan II requires 36 quarter units of upper division and graduate courses, followed by a comprehensive final examination administered by the student's department or group. At least 18 of the units must be in graduate courses in the major subject.

Students under both plans are guided by their graduate advisers regarding distribution of course work among the departments. Further requirements are specified by the major department.

Advancement to Candidacy Admission to candidacy for a master's degree is not automatic upon completion of the degree requirements; it requires a formal application to the Dean of the Graduate Division that bears the approval of the student's major department or school and a precise statement of the studies on which the application is based. Application must be made not later than the end of the second week of instruction of the quarter in which the degree is to be awarded. If a student is to submit a thesis, however, he should consult his adviser about advancement to candidacy as early as possible so that the appropriate committee can be formed.

The Master's Thesis Students under Plan I, described above, must submit a thesis in typewritten or printed form (or other form deemed acceptable by the Graduate Council). If typewritten, it must be double spaced on medium weight, 8½" by 11" paper of good quality, with a minimum left-hand margin of 1½". It must be unbound and without perforations, and the type must be adequate for photographic reproduction. One copy (the original, if typewritten), following approval by the student's thesis committee, is filed with the Dean of the Graduate Division. Further information regarding the organization and format of the thesis is available from that office.

The thesis constitutes a report, in as brief a form as possible, of results obtained in an original investigation of a problem. While it is understood that the problem in question need be one of only limited scope, the thesis should be comparable in style, organization, and depth of understanding to investigations of greater scope, such as the dissertations of doctoral candidates.

The thesis is submitted to a committee of three members of the faculty appointed by the Dean of the Graduate Division. Wherever possible, one member of the committee is chosen from a department other than that of the candidate's major subject. The candidate is required to confer with all members of his committee before undertaking the work of a thesis. Since the committee is not appointed until a student is advanced to candidacy, the student, to avoid the possibility of having to make extensive revisions, normally should not begin his thesis work before advancement. Responsibility for placing the completed thesis in the hands of the committee members rests with the student.

If all three members of the committee approve the thesis, they sign the official title page prepared by the Office of the Dean of the Graduate Division, where a copy of the thesis is filed for later deposit in the University Library. If any member of the committee doubts the acceptability of the thesis, the chairman convenes the committee to discuss it. If the committee then reaches agreement on its acceptability, the thesis is signed and filed as previously indicated. If there is disagreement, the thesis is sent to the Dean of the Graduate Division together with a brief statement of each committee member's opinion. If the
thesis is rejected by all members of the committee, it is sent to the Dean with a statement to that effect by the committee chairman. In all cases of rejection or split vote, the Administrative Committee of the Graduate Council makes the final decision.

The Doctor's Degree

Instruction is offered on the Berkeley campus leading to the following doctor's degrees:

- **Academic**
  - Doctor of Philosophy (Ph.D.)
  - Engineering (D. Eng.)

- **Professional**
  - Doctor's degrees in:
    - Criminology (D. Crim.)
    - Library Science (D. L.S.)
    - Education (Ed. D.)
    - Law (J. S.D., J. D.)
    - Public Health (Dr. P. H.)
    - Social Welfare (D. S. W.)

Professional degree programs are outlined in the individual Announcements of the colleges and schools offering them. The general procedures given in this section apply primarily to the academic doctor's degree, though the information will be of interest to candidates in all fields.

The Doctor of Philosophy degree is not granted at the University of California solely for fulfilling technical requirements such as residence and completion of specified courses. The degree is awarded in recognition of a candidate's knowledge of a broad field of learning and his distinguished accomplishment in that field through an original contribution of significant knowledge and ideas. The candidate's research must reveal high critical ability and powers of imagination and synthesis.

**Preparation**

A prospective candidate for a doctor's degree must possess a bachelor's degree from the University of California, or an equivalent degree from an institution of comparable standing, with sufficient undergraduate preparation for advanced work in his proposed field, as determined by the department of his choice. The study of foreign languages should also be a strong part of undergraduate preparation for Ph.D. degree study.

**Residence Requirement**

As defined earlier, minimum residence of two years, or six quarters, is required for the Ph.D., although most candidates actually spend closer to four years.

**Program of Study**

The candidate's program of study must be approved by the Graduate Council. It must embrace a field of study previously approved by the department(s) or group concerned, and it must extend over a period of at least two years. Many of the doctoral programs require more than two years of study; in any case, it is the candidate's performance rather than his length of study that leads to recommendation for the degree. Normally the last year must be spent in continuous residence.

The field of study may be in a single department, except for essential related courses in other departments, in several departments, or in an interdisciplinary group. Once he has chosen his field of study, the student should confer with

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† The Juris Doctor degree (J.D.) has replaced the previously offered LL.B. as the basic degree in Law. Since it is a graduate degree, application for admission is made both to the Graduate Division and the School of Law.
his graduate adviser to select the sequence of courses that will best prepare him for his qualifying examinations and his research work.

**Interdisciplinary Groups** The University has established graduate programs in a number of fields that cut across conventional departmental lines yet comprise definite cores of knowledge. These programs are administered by groups of faculty from several related departments and, in certain instances, from several campuses. Students enrolled in these programs can work with any faculty member in the group without having to pursue the particular discipline of the department with which the faculty member is associated. Moreover, this arrangement makes available to group students a range of facilities not ordinarily open to students enrolled in department programs. Since groups have no budgets or facilities of their own, however, most applicants, to be accepted by a particular group, must first obtain the sponsorship of one of its faculty members.

To allow the student an approach to his field that, in its breadth, falls between those of the department and the interdisciplinary group, the Graduate Division has encouraged the informal establishment of *ad hoc* programs leading to the Ph.D. degree. In such programs, the student may work out a course of study in two departments that will lead to a degree in one of them, with, of course, the guidance and approval of both departments. In some cases, e.g., Medieval Studies, a faculty committee is specifically appointed to advise both the student and the interested departments on setting up a program that will best meet the student's needs.

**Foreign Language Requirement** The requirement serves (1) to make certain that a Ph.D. candidate has the ability to acquire wide knowledge in his field of study, and (2) to enable him to keep up with foreign developments in the field. There is sufficient flexibility to this requirement to enable each department or group to adapt it to the needs of the individual candidate. Before advancement to candidacy, and preferably before admission to the Qualifying Examinations (see below), the student must satisfy one of the following options, as determined by his department or group:

1. Demonstration of a reading knowledge of two languages by passing an examination in each, set by the department(s) concerned. The department(s) determine(s) whether a dictionary may be used; the length of the passage and the time allotted are subject to regulation by the Graduate Council. For one of these examinations, the student may, subject to the approval of the department(s) concerned, substitute a five-quarter (or equivalent) sequence of courses in that language, of University grade, passed with an average of C or better. The Graduate Council establishes general policies respecting such sequences, including time limits beyond which they no longer carry credit, and authorizes the Dean, upon recommendation of the department(s) concerned, to accept language courses taken at another institution.

2. Demonstration of an exceptionally thorough reading knowledge and an adequate knowledge of the grammatical structure of a single language. Such command is tested under the direction of the Graduate Council.

In the above options the terms "language" and "languages" refer to any language certified to the Graduate Council by the departments concerned.

Students who by virtue of background have a native speaker's command of a certified language will be considered to have met the language requirement as specified in
The candidate's degree

2, above. Standards for evidence of background will be established by the Graduate Council.

Departments will periodically review their procedures for fulfillment of the language requirement and make appropriate recommendations to the Dean of the Graduate Division. Changes in departmental procedure should be brought to his attention; specification of requirements lower than or markedly different from those established here can be accomplished at the discretion of the Graduate Council on petition by departments.

The Dean will periodically review the administration of the language requirement to determine whether the standards set by the Graduate Council are being maintained and report his recommendations to the Council.

The above constitutes the general foreign language requirement for the Ph.D. degree; the student's department(s) may require knowledge of more than two languages (some departments currently require as many as five). The prospective graduate student is strongly urged to begin his language preparation in his undergraduate years. Noncredit courses for graduate students are offered by the various language departments to prepare candidates for reading examinations.

Notice of Intended Candidacy Notice of his intention to proceed to candidacy for the Ph.D. degree should be given by the student to his department or group as early as possible in his graduate career, preferably by the end of the second quarter of residence.

Qualifying Examinations Before admission to candidacy a student must pass a series of qualifying examinations administered by a committee appointed by the Graduate Council. He must have removed any deficiencies in his training, fulfilled the foreign language requirement, and maintained better than a B average in all course work undertaken in graduate status.

Advancement to Candidacy Application is made on a form furnished by the Graduate Division. The completed form, bearing the endorsement of the student's department, is filed with the Dean of the Graduate Division, who determines whether all formal requirements have been met. A fee of $25 must be paid before the application is filed.

The Candidate's Degree A new degree, "Candidate in Philosophy," which gives formal recognition to a definite stage of progress toward the doctorate, may be awarded to students when they are advanced to candidacy for the Ph.D. degree. The following departments and groups currently offer this degree:

- Applied Mathematics
- Bacteriology
- Botany
- Comparative Literature
- Economics
- Electrical Engineering
- Endocrinology
- English
- French
- Geography
- German
- Immunology
- Librarianship
- Mathematics
- Near Eastern Languages
- Nutrition
- Oriental Languages
- Paleontology
- Plant Physiology
- Romance Languages and Literatures
- Romance Philology
- Slavic Languages and Literatures
- Statistics
- Zoology

Doctoral Dissertation The format of the Ph.D. dissertation is similar to that outlined in the last section for the master's thesis. Further information is available from the Dean of the Graduate Division.
The dissertation, the product of independent investigation, must be submitted to the committee in charge (see below), and must receive the approval of this committee and of the Graduate Council. The dissertation is one of the most important requirements for the Ph.D. program; the degree is in no case granted for completion of course work only, no matter how extensive.

The candidate is to work under one of two plans, as adopted by his department or group:

Under Plan A, the Administrative Committee of the Graduate Council appoints a five-man committee which determines whether the candidate has met the requirements for the degree. Three members of the committee, one of whom must be from a department other than that of the student's major subject, guide the candidate in his research and pass judgment on the merits of his dissertation. The whole committee conducts a final oral examination dealing primarily with the relationship between the dissertation and the general field of study in which the subject of the dissertation lies. Admission to the final examinations may be restricted to the members of the committee, members of the Academic Senate, and guests of equivalent rank from other institutions.

Under Plan B, the Administrative Committee of the Graduate Council appoints a committee of three members, one of whom must be from a department other than that of the student's major subject, to guide the candidate in his research and judge the merits of his dissertation. This committee may require any necessary conferences for elucidation of the subject treated in the dissertation. After presentation of the dissertation, but before final action is taken upon it, the committee may, if deemed necessary, require the candidate to defend the dissertation in a formal oral examination.

After the dissertation has been approved by the candidate's committee, one copy (the original, if typewritten) is filed with the Dean of the Graduate Division on a date specified by that office. Along with the dissertation, an abstract of it, not to exceed 600 words, is also filed with the Graduate Division for publication in Dissertation Abstracts.

All of the procedures and regulations described above, and in the preceding section on master's degrees, constitute the minimum requirements for the higher degrees, as set by the Graduate Division. Each academic department may adopt additional requirements, as approved by the Dean of the Graduate Division and the Graduate Council, according to the demands of a candidate's field of study. Departmental choice of doctoral Plans A and B is fixed as listed below.

Facilities and Services

Foreign Language Training When space is available, University graduate students and faculty may facilitate their research and overseas field work by enrolling in courses for oral proficiency training in any of the twenty-eight languages taught at the Defense Language Institute at the Presidio of Monterey. For additional information, the campus Language Training Adviser may be consulted. Application forms may be obtained from the Secretary, University of California Language Training Advisory Committee, University of California, Santa Cruz, California 95060.

Stanford-California Exchange Program Graduate students with superior academic records may participate in the Stanford-California Exchange program when it is deemed desirable for them to take a limited amount of work in courses offered at Stanford and not available at Berkeley. Participants in this program
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The Graduate Theological Union in Berkeley offers graduate programs in religion that consist of Union courses as well as courses offered in the Graduate Division at Berkeley. Examinations, the dissertation, and the general scope of the program are under the direction of faculty members representing both the University and the Graduate Theological Union. Further information, a catalogue, and application forms may be obtained through the office of the Graduate Theological Union, 2465 LeConte, Berkeley, California 94709.
Joint Doctoral Programs  Special Education—A joint doctoral program in special education leading to either the Ph.D. degree or the Ed.D. degree is offered by the University at Berkeley and San Francisco State College. The program is interdisciplinary, including clinical experience as well as preparation in depth in the behavioral sciences and in statistics and research methods. For application material and additional information, write to: Dean, School of Education, University of California, Berkeley, California 94720, or to the Department of Education, San Francisco State College, 1600 Holloway Avenue, San Francisco, California 94132. Genetics—A joint doctoral program in genetics leading to the Ph.D. degree is offered by the University at Berkeley and San Diego State College. For application material and additional information, write to: Professor James W. Fristrom, Department of Genetics, 345 Mulford Hall, University of California, Berkeley, California 94720.

University support for these programs is reflected in the continuing concern shown by the Coordinating Committee on Graduate Affairs for their quality and in the constant review by various agencies of the University of the guidelines established for the approval of future programs. The importance of these programs for State College students, many of whom live in the state's larger urban areas, and their place in the state government's overall plan for the support of doctoral education have received special—and positive—attention in these considerations.

Study Abroad for Graduate Students

Education Abroad Program  Graduate students who have been admitted for study toward a higher degree may also study or pursue research at the University's Education Abroad Centers. An applicant must have completed at least one year in residence at Berkeley before applying, must demonstrate the language proficiency required of participants in the Education Abroad Program, and must secure the approval of his Graduate Adviser, his Departmental Chairman, the Graduate Dean, and the Campus Coordinator for Education Abroad. If the student desires that the unit credit earned at a center be counted toward his graduate program, he must, after his return to Berkeley and with departmental support, petition the Dean of the Graduate Division to present his request to the Administrative Committee of the Graduate Council. For additional information and application materials, write to: Dean William A. McCormack, Room 104-A, Building D, 2538 Channing Way, Berkeley, California 94720. It should be pointed out that in some cases graduate students may find that the informal support and assistance of the staff at Education Abroad Centers may serve their needs better than regular participation in the Program. Interested students are urged to consult with their academic adviser.

Professional International Education  The Professional Schools at Berkeley conduct programs in New Delhi and Jerusalem. After an intensive course in the country's language, students from each of the professional schools spend at least two quarters working and studying in the program. A seminar is given each quarter by the program's director (a Berkeley faculty member). The students
also work twenty hours per week as interns in local government or private agencies appropriate to their professional interest.

Students who have completed the equivalent of one year of graduate study at Berkeley are eligible to apply. Fellowships covering round trip air fare and living expenses in the foreign country are provided for the Professional School Fellows. Regular campus aid funds may also be used abroad.

Interested students should inquire at the office of the Dean of their professional school, or at the Education Abroad Office, 2538 Channing Way, Building D, Room 104-A.

For other programs abroad for graduate students, see "Education Abroad" under the "Services and Facilities" section of this catalogue.

Financial Aid to Graduate Students

Over 500 fellowships and graduate scholarships are offered on the Berkeley campus. Awards range from about $300 to $3,600 for the academic year, the majority carrying stipends in the range of $2,000 to $2,400. Some are restricted to beginning graduate students, others to advanced graduate students; some are restricted to specific fields of study, others are open to all students by competition. Provision is made also for a number of traveling fellowships.

Some funds for these awards are made available from endowments held in trust by the University and given by interested friends and alumni; others are made available from annual donations from educational foundations, industry, government, and individual benefactors.

Information

Information on awards available each year is issued early in the fall. Requests for information should be addressed to the Graduate Admission/Fellowship Office, Graduate Division, University of California, Berkeley, California 94720.

Application Procedure

Students who will be enrolling as new graduate students in a fall quarter may apply for admission and for consideration for a fellowship or graduate scholarship by completing a combined application for Admission and Fellowship* and filing it by the deadline set for receipt of fellowship applications. Presently, the fellowship deadline is December 15 of the year preceding the year in which the award is tenable; however, this date is subject to change and a student should write for information in the late summer or early fall of the year preceding his proposed enrollment at Berkeley.

Continuing or returning graduate students at Berkeley in a fall quarter may obtain necessary fellowship application material from departmental offices or from the offices of the Dean of the Graduate Division. These applications and supporting materials must be filed with the department by the date established for new student applications for the year in question.

Applications for all the fellowship and graduate scholarship award programs mentioned here and on the following page are considered only once a year, and, except for certain federal awards which may be taken up in the summer, are for

* Applications are not sent by airmail unless the applicant forwards in advance sufficient postage for 4 ounces of airmail postage.
the academic year beginning with the fall quarter and extending through the winter and spring quarters. None of the awards is made in mid-year.

**Announcement of Awards**  Awards are announced on or about April 1, and must be accepted or refused, in writing, by April 15. The acceptance of a fellowship or graduate scholarship carries with it the presumption that the incumbent will devote full time to graduate study and research at the University of California. Institutions which are members of the Association of Graduate Schools in the Association of American Universities require that anyone who resigns an accepted appointment after April 15 must, in order to become eligible to fill a vacancy in a member institution, receive consent to do so from the university which first appointed him.

**Criteria of Appointment**  The purpose of graduate appointments is to provide able and productive scholars for the future. Awards are thus made as a mark of honor, primarily on the bases of outstanding scholastic achievement and promise. The applicant’s academic record, evidence of his ability in research or of some other creative accomplishment, his intellectual capacity, and his general promise, are all strongly considered. Normally the award is for one academic year. There are, however, a number of fellowships available that give support to students for periods of from three to five years.

Because a fellowship is designed to enable a student to devote full time to studies, appointees have, until recently, been prohibited from accepting employment concurrent with their period of tenure. However, in view of current living costs, the Dean of the Graduate Division may, upon recommendation of the student’s graduate adviser, approve a limited amount of paid employment, provided the fellowship holder is able to carry a full program of graduate study with distinction.

**Honorary Traveling Fellowships**  Honorary traveling fellowships may be awarded to distinguished graduate students in any department. Such awards do not carry any stipend, but entitle the holder to official credentials from the University which may be of assistance in pursuit of studies and special inquiries in other states and foreign lands. Applications for honorary traveling fellowships must be received by the Graduate Admission/Fellowship Office by the same date as for other fellowships, December 15.

**National Defense Education Act Fellowships**  A number of National Defense Graduate Fellowships are available under Title IV of the National Defense Education Act in specified fields of study. National Defense Foreign Language Graduate Fellowships are also available under Title VI of the same act, which provides for awards in certain designated modern foreign languages.

Students who apply through the regular University fellowship competition will be considered for awards under both Title IV and Title VI without making further application.

**Traineeships**  A number of National Science Foundation Graduate Traineeships are available to qualified students in certain fields. Applicants for regular University fellowships will be considered for these traineeships automatically.
Teaching Assistantships* Many departments make available teaching assistantships to outstanding graduate students, providing them an income of $3,240 to $3,330 per year, depending on the number of years of experience as a teaching assistant. The teaching assistant, chosen for his scholarly achievement and his promise as a teacher, must be a full-time student in residence. He serves his apprenticeship under the active tutelage and supervision of regular faculty members. Application is made directly to the chairman of the department in which the student wishes to teach. Students working for the Ph.D. degree in nutrition, biochemistry, and bacteriology are required to complete a specified minimum period of teaching as part of their degree programs.

Teaching Fellowships An appointee to a teaching fellowship must be a full-time student in residence who has been advanced to candidacy for the doctorate, or otherwise achieved appropriate professional maturity. He is chosen for his competence to conduct the entire instruction of a group of students in a lower division course, under general supervision of a regular faculty member. The stipend is $3,960 for a half-time annual appointment. Application is made to the individual departmental chairman.

Associateships The title “Associate” is assigned to teachers employed temporarily and not under consideration for appointment as “Instructor” or “Professor.” Normally, their services, either full- or part-time, are contracted to give independent instruction in lower division courses. Associates may or may not be registered graduate students or candidates for degrees at this University. Appointees who are registered graduate students must possess a master’s degree or equivalent training and have had at least one year of teaching experience (including that of a teaching fellowship or assistantship) in or outside of the University. Stipends for full-time service range from $6,816 to $8,520. Application is made to the individual departmental chairman.

Research Assistantships Positions as research assistants are available to qualified students in the various departments, institutes, and bureaus at the University. The stipends vary according to the type of research and the amount of time devoted to it. Application is made directly to the department, institute, or bureau.

Waiver of the Nonresident Tuition Fee A limited number of waivers of the nonresident tuition fee are available for full-time graduate students with distinguished academic records, and for teaching assistants who meet the qualifications set for such appointments. Applicants must enroll in a full program of study toward a higher degree, and cannot be the recipients of any fellowship, scholarship, grant-in-aid, or award from a city, state, or national government, or from any other source that would make them ineligible for the privilege of the award. The waiver application deadline is May 15. Applications for new and continuing students may be obtained from the Dean of the Graduate Division.

* The salary for teaching and research assistantships is subject to United States income tax deductions. Salary figures given are gross, not net. Information about salary payment schedules should be obtained at the time an appointment is offered, since payment dates for work performed may be considerably later than dates when registration fees are due.
GRADUATE DEGREES OFFERED ON THE BERKELEY CAMPUS

Applicants should specify both general field and emphasis, if any.

Agricultural Chemistry, Ph.D.
Agricultural Economics, M.S., Ph.D.
Anatomy, M.A., Ph.D.
Ancient History and Archaeology, M.A., Ph.D.
Anthropology, M.A., Ph.D.
Applied Mathematics, Ph.D.
Architecture, M.Arch., Ph.D.
Art, M.A., M.F.A.
Asian Studies, M.A., Ph.D.
M.A. program emphases:
East Asian, Southeast Asian, South Asian
Astronomy, M.A., Ph.D.
Atmospheric and Space Sciences, M.A., Ph.D.
Bacteriology, M.A., Ph.D.
Biochemistry, M.A., Ph.D.
Biophysics, Ph.D.
Bioradiology, M.A., Ph.D.
Botany, M.A., Ph.D.
Business Administration, M.B.A., M.S., Ph.D.
Chemical Engineering, M.S., Ph.D.
Chemistry, M.S., Ph.D.
City and Regional Planning, M.C.P., Ph.D.
Classical Archaeology, M.A., Ph.D.
Classics, M.A., Ph.D.
Ph.D. program emphases:
Greek, Latin
Comparative Biochemistry, M.A., Ph.D.
Comparative Literature, M.A., Ph.D.
Comparative Pathology, M.S., Ph.D.
Computer Science, M.A., Ph.D.
Criminology, M.Crim., D.Crim.
Demography, M.A., Ph.D.
Design, M.A.
Dramatic Art, M.A., Ph.D.
Economics, M.A., Ph.D.
Education, M.A., Ph.D., Ed.D.
Endocrinology, M.A., Ph.D.
Engineering Science, M.S., Ph.D.
Emphases for Engineering and Engineering Science
Civil Engineering
Electrical Engineering
Industrial Engineering and Operations Research
Mechanical Engineering
Mineral Technology
Naval Architecture
Nuclear Engineering
English, M.A., Ph.D.
Entomology, M.S., Ph.D.
Environmental Health Sciences, M.S., Ph.D.
Epidemiology, Ph.D.
Folklore, M.A.
Food Science, M.S.
Forestry, M.S., M.F., Ph.D.
French, M.A., Ph.D.
Genetics, M.S., Ph.D.
Geography, M.A., Ph.D.
Geology, M.A., Ph.D.
Geophysics, M.A., Ph.D.
German, M.A., Ph.D.
Greek, M.A.
History, M.A., Ph.D.
History of Art, M.A., Ph.D.
Immunology, Ph.D.
Italian, M.A., Ph.D.
Journalism, M.J.
Landscape Architecture, M.L.A.
Latin, M.A.
Latin-American Studies, Ph.D.
Law, J.D., LL.M., J.S.D.
Librarianship, M.L.S., Ph.D., D.L.S.
Linguistics, M.A., Ph.D.
Logic and the Methodology of Science, Ph.D.
Mathematics, M.A., Ph.D.
Medical Physics, Ph.D.
Microbiology, M.A., Ph.D.
Molecular Biology, M.A., Ph.D.
Music, M.A., Ph.D.
Near Eastern Languages, M.A., Ph.D.
Nutrition, M.S., Ph.D.
Oriental Languages, M.A., Ph.D.
Paleontology, M.A., Ph.D.
Parasitology, M.S., Ph.D.
Philosophy, M.A., Ph.D.
Physical Education, M.A.
Physics, M.A., Ph.D.
Physiological Optics, M.S., Ph.D.
Physiology, M.A., Ph.D.
Plant Pathology, M.S., Ph.D.
Plant Physiology, M.S., Ph.D.
Political Science, M.A., Ph.D.
Psychology, M.A., Ph.D.
Public Administration, M.A.
Public Health, M.P.H., Dr.P.H.
Range Management, M.S.
Romance Languages and Literatures, Ph.D.
Emphases:
French, Italian, Spanish
Romance Philology, Ph.D.
Sanskrit, Ph.D.
Scandinavian Languages and Literatures, M.A., Ph.D.
Science/Mathematics Education, Ph.D.
Slavic Languages and Literatures, M.A., Ph.D.
Social Welfare, M.S.W., D.S.W.
Sociology, M.A., Ph.D.
Soil Science, M.S., Ph.D.
Spanish, M.A.
Speech, M.A., Ph.D.
Statistics, M.A., Ph.D.
Wood Science and Technology, M.S., Ph.D.
Zoology, M.A., Ph.D.

* Students are not admitted to work for the M.A. degree, although it may be awarded to students pursuing work toward the Ph.D. degree after fulfillment of the appropriate requirements.

Certificate in Russian and East European Studies Students who have had substantial training in the Russian and East European Area in at least two departments and have had 16 quarter units (or equivalent knowledge) of an East European language can, by taking a required number of additional courses in the area, obtain a Certificate in Russian and East European Studies. The certificate course requirements can be fulfilled either as part of a program leading to a higher degree in the social sciences or humanities or after receipt of such a degree.
Medieval Studies  Students interested in specializing in medieval studies may be assisted by a Committee for Medieval Studies Advisory to the Dean of the Graduate Division. In drawing up a program of study, the committee will provide necessary information both to students and their faculty advisers.

Teaching Credentials  Work leading to the Standard Teaching Credential is given on the Berkeley campus. For details, please consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION.
IV. Services and Facilities

The Berkeley campus is acclaimed for its vast range of facilities, opportunities, and services to students. This chapter deals with those aspects of campus life apart from taking courses—including information on campus services, student organizations and activities, fees and expenses, financial aids, and housing.

Campus Libraries

The University maintains a network of reading and research libraries throughout the campus, in a wide variety of fields. The libraries contain a total of over 3,600,000 volumes, and 50,000 current periodicals and serials, as well as government documents.

The Main Library houses an extensive loan stack collection comprising the bulk of the humanities and social science volumes; a current periodical room; a Reference Service which offers valuable assistance in the bibliographical tasks of research; a department containing official documents of the Federal, State, foreign, and international governments; a Map Room; a Newspaper and Microcopy Room; a Rare Books and Special Collections Department; the Bancroft Library, with special collections in Californian, western American and colonial Latin-American history; an undergraduate Reserve Book Room (designed for rapid circulation of assigned or recommended books in heavy demand); the Morrison Library (a recreational reading room); and a graduate reading room and reserve service for students in the humanities.

Branch libraries are usually located in the respective academic departments or schools which they serve. These include:

- Biology
- Optometry
- Environmental Design
- Public Health
- Engineering
- Music
- Education and Psychology
- Earth Sciences
- Art and Anthropology
- Psychology
- Astronomy, Mathematics, Statistics
- Social Science (graduate)
- Agriculture
- Physics
- Social Welfare
- Entomology
- Chemistry
- East Asiatic
- Forestry
- Biochemistry
- Librarianship

A student's registration card entitles him to borrow books from the University library and its branches. Please consult the Main or branch libraries for the regulations of the various units. Orientation leaflets are available in the Main Library.

Services to Students

Student Health Service  Located in Cowell Memorial Hospital in the eastern area of the campus, the Student Health Service is financed by a portion of the registration fee paid by each student at registration. The purpose of this service is to conserve the student’s time for classwork and studies by preventing and treating acute illnesses.

Students who have paid the University Registration Fee are eligible for health service from the first day of the quarter in which they register to the last day of the quarter, or to the date of official withdrawal if they withdraw prior to the end
of a quarter or semester. Following verification of academic status by departments concerned, continuing graduate students not registered, but working toward an advanced degree, may pay the Student Health Service fee (deadline: 10th day of classes each quarter) and, thereby, become eligible for care. One may receive hospital care up to twenty days in any quarter. Outpatient care includes emergency surgery, routine laboratory and X-ray procedures, and certain drugs as provided and prescribed by the staff of the Health Service. Entering students are mailed a booklet describing the available services.

With certain exceptions, the Health Service does not provide continuing treatment or surgery for chronic physical defects or illnesses present at the time of entrance to the University; for injury or illness under treatment elsewhere; or for conditions where medical or surgical treatment is not immediately necessary and may be postponed to avoid interruption of classwork.

Emergency and routine dental care is given during the hours of 8 to 10:30 a.m., and 1 to 3:30 p.m. A charge is made for all general dentistry, cleaning, treatments, X rays, and consultations.

**Optometry Clinic** Emergency and routine vision services are provided in the Optometry Clinic of the School of Optometry. Free eye examinations are available to students and the general public. Services include those related to contact lenses and orthoptics, low vision aids, and other optometric care. If glasses or contact lenses are prescribed, a minimal charge is made for them.

**Counseling Center** Any regularly enrolled student may avail himself of the services of a professionally qualified staff, that will answer inquiries, or talk with the student at length, about his scholastic performance, choice of vocation, or personal adjustment. The student may request help in improving his study skills, assessing his interests and aptitudes, or exploring long-range career opportunities. He may, if he wishes, discuss personal problems. Legal counseling is also offered. All communication between student and counselor is treated confidentially.

The Counseling Center provides complete psychological and aptitude testing as part of the counseling process, and maintains an extensive library of reference material on occupations, professions, and career opportunities. Special testing is also offered when required for admission to graduate or undergraduate programs. The Center maintains directories and catalogues of colleges, professional and technical schools; lists of scholarships, fellowships and loans. Students may use these reference materials even if not seeking counseling services. The Reading and Study Skills Service offers both group and individualized programs for students desiring to improve their basic educational skills. The program includes diagnosis and correction of study problems, reading, spelling and vocabulary difficulties. The Center maintains a modern, electronically equipped reading laboratory supervised by a professionally trained staff. Further inquiry or appointments may be made at the Counseling Center, Temporary Building 5, just north of the Campanile Esplanade.

**Student and Alumni Placement Center** Students who seek part-time, temporary, vacation, or odd-job employment should apply to the Student Division of the Placement Center, located on the first floor of Temporary Building 6. Students
are advised to avoid part-time employment during their first quarter at the University, if possible. Students should arrange their class schedules before applying to the Center; to be served, they must identify themselves by a current registration card or a letter of admission to the University. The Center’s staff provides job assistance in meeting financial obligations and helps students determine those areas of work for which they are qualified.

School-year jobs for students cover a wide range, skilled and unskilled. These include services, technical, clerical, sales, domestic, manual, and many other kinds of employment. Some employers offer room and board in lieu of salaries. Federal and state legislation has made available to the University funds providing a number of jobs—in a great variety of fields, both on and off campus—designed for needy students. Before applying to the Placement Center for these Work-Study Program opportunities, certification of financial need must be secured from the Office of Special Services, 2539 Channing Way.

The Career Division of the Placement Center maintains a service on the second floor of T-6 for career planning and placement of University of California degree-candidates and alumni in permanent employment. Seniors and graduate students are encouraged to register with the Career Division no later than their final year of enrollment. During this period, the Center arranges on-campus interviews with employer representatives who visit each fall and spring. Information about career opportunities is also available at all times to prospective graduates and alumni.

The Center supports and subscribes to all equal opportunity employment practices.

Office of Educational Placement Located at 2120 Oxford Street, Berkeley, California 94720, this is the placement center for teaching, administrative, supervisory, and research positions—in universities, colleges, junior colleges, high schools, and elementary schools, in this country and abroad. The Office serves all qualified graduates and prospective graduates of the University of California. The Office registers candidates and assembles information into personal files concerning background, training, and professional experience, in order to match candidates with available positions. Placement advisers counsel candidates, communicate with employers, arrange interviews and recommend qualified candidates to employers. The University reserves the right to recommend only those persons who are considered to be fully qualified.

Office of Financial Aids The Office of Financial Aids is located at 2539 Channing Way. Here the student may obtain information and assistance under the Higher Education Act of 1965 as amended (National Defense Education Act Loans, Federal Student Guaranteed Loans, Educational Opportunity Grants and the Work-Study Program), Health Professions Student Loans and Grants, Law Enforcement Education Program, the University of California Grant Program, and the Earle C. Anthony Graduate Loan Fund. In addition, veterans’ educational and Social Security benefits are administered by this office. For details on these services, please see the sections below on Financial Aids and Military Information.

Sports and Recreational Facilities  Harmon Gymnasium for men is equipped with two swimming pools, as well as squash, handball, volleyball, and tennis courts, athletic fields, and a variety of indoor facilities. It is open throughout the year, free of charge, to every male student of the University, who may obtain, upon identification by registration card, a locker and free use of gym clothing and equipment. Apply at 2-B Harmon Gymnasium. Hearst Gymnasium offers similar advantages to women students.

A wide variety of instructional, intramural, extramural, intercollegiate, and recreational athletic programs and sports clubs are offered by the Department of Physical Education, Department of Intercollegiate Athletics, and the ASUC.

The Strawberry Canyon Recreational Area was opened in 1959 for the benefit of the entire University community. It contains the Haas Clubhouse, the Lucie Stern Pool, East Pool, and lounging, play, and picnic-barbecue areas. It is open, free of charge, to all currently registered students. Nonregistered students, faculty and nonacademic personnel may purchase privilege cards. Family group cards are also available. Further information may be obtained by calling Haas Clubhouse.

University Police  The University of California Police Department was established by the State Legislature in 1947 as a fully constituted law enforcement agency. Subsequently, in 1962, the legislature revised the section of the Education Code dealing with University Police, broadening and defining their legal jurisdiction. The new section established full police powers for the University Police and places with them absolute responsibility for maintaining law and order and for investigation of criminal offenses committed within the jurisdiction of the department. Campus headquarters is in 2 Sproul Hall. The office is open twenty-four hours a day. The University Police also operates a lost-and-found service, which is open from 12:00 noon until 4:00 p.m., Monday through Friday.

Dining Facilities  The Dining Commons is located just north of the Student Union directly across the plaza from Sproul Hall. More than 75,000 meals are served each week to the University community and visitors, by the multiple facilities of the Dining Commons. A cafeteria, serving hot lunches and dinners, is located on the lower plaza level. A terrace, serving hot meals, sandwiches, and snacks; and the Golden Bear restaurant, offering table service, are located on Sproul Hall plaza level. The Bear’s Lair (located on the lower plaza level of the Student Union) has grill and fountain services. The Commons also operates a catering service for special affairs and student activities on campus.

Student Union and Student Center  The Student Union, a six-level building located at the south entrance of the campus, is a focal point of student activities and recreation. It contains quiet, comfortable lounges, a television room, meeting rooms, Pauley Ballroom, an art exhibit area, a game room, a meditation room, a check-cashing service, a ticket office, the ASUC Store (a comprehensive book, stationery, and supply store), an information center, a bowling alley, a barber shop, a garage, a creative art studio, and facilities for the ASUC musical organizations. Operating costs of the Student Union are largely financed by revenues from ASUC enterprises located within the facilities.
The Student Union and the Dining Commons were the initial steps in a building program culminating in the establishment of a Student Center located around a spacious plaza. A more recent addition to the Student Center was Eshleman Hall, which houses the ASUC publications and student activities as well as the Intercollegiate Athletic Department. An auditorium and theater, finished in 1968, completes the Student Center.

Student Organizations and Activities

The ASUC The Associated Students of the University of California is the official undergraduate organization for student government. Membership in the ASUC is automatic for undergraduates upon payment of the ASUC fee along with other registration fees. This nonprofit organization through its student elected Senate, and a planning and a coordinating body known as the Cabinet is responsible for directing a large variety of student activities and serves as official student spokesman in University affairs. Students are urged to make use of their ASUC votes to secure the representatives who will serve them capably and articulately. The Student Center described above is governed by a Union Program and Facilities Board, responsible to the Chancellor for financial affairs, management of the facilities, personnel, and programs associated with the Student Center complex.

Center for Educational Change The Center for Educational Change, located in 305 Eshleman Hall, has developed into a thriving center for educational programs and change on the Berkeley campus. Funded by the ASUC, the Center attempts to provide a place for Berkeley students to participate in determining their educations and has developed a number of programs to improve the educational environment. Among its most successful programs is the Center for Participant Education, a student group which encourages and helps develop student-initiated courses, some of which have since become a part of the regular curriculum. Also a well-established program is the Student-Faculty Retreat, which brings students and faculty together for a weekend in the mountains to discuss a controversial topic of relevance to the campus community. The Slate Supplement, one of the pioneering student evaluations of teachers and courses, is also located in the Center. The ASUC Teaching Awards and the Prominent People Program, which brings visiting lecturers to campus, are administered through the CEC. Finally, the Center works on various ad hoc projects in response to changes in the educational policy of the campus. The most successful project of this type to date was the “Student Proposal for an Undergraduate Program in Letters and Science” which is being considered by the College faculty.

The Community Projects Office (CPO) This office, located on the street level of Eshleman Hall, serves as the ASUC clearinghouse for existing volunteer opportunities in the Bay area and as the resource agency for the development of new projects. For the student who is interested in doing volunteer work of any type, the CPO provides an orientation program; files and information on the various projects; a library of commentary books, texts, and tutoring aids; and also sponsors numerous workshops in areas such as co-operative buying and teaching
reading. The CPO is also working directly with a large number of Bay area organizations, developing resources and doing research on campus, and has the necessary information and contacts for those interested in starting new projects in any area. The CPO employs a number of part-time student employees and a larger number of student volunteers. For these students, the CPO provides a meaningful and relevant link to the community while at the same time allowing the students to work on the campus.

SUPERB The Student Union Program, Entertainment, and Recreation Board, located in 303 Eshleman Hall, is responsible for developing and supervising an activities program for the Student Union to satisfy the cultural, educational, recreational, and social needs of the campus. Programs and activities planned include speakers, dances, exhibits, coffee hours, recreational exhibitions, cabarets, movies, music and art festivals, and special presentations.

Student Publications Owned and operated by the ASUC, the student publications provide opportunities to undergraduates for activities in all phases of publishing: writing, editing, reporting, art and design, advertising, sales, and general management. There are five ASUC publications:

- The Daily Californian—the campus newspaper; published continuously since 1897, it has ranked among the best college papers in the country.
- The Pelican—the monthly humor magazine; specializes in jokes and satire, with articles and features of current interest.
- The Blue and Gold—the official yearbook, covering virtually all phases of campus and academic life; it is a permanent record of the year’s events.
- California Engineer—a magazine of scientific topics, for both technical and general interests.
- Occident—one of the oldest campus publications, it is the literary magazine, featuring poetry, fiction, criticism, and commentary, by students, faculty, and distinguished guest writers.

The center for all student publications except the Pelican is Eshleman Hall, located in the Student Center.

Lectures, Music, Drama, Debate The University offers a broad variety of extracurricular activities in the humanities. These include:

- Committee for Arts and Lectures (CAL)—a program of drama, music, dance, and lectures. Some events are open to students and to the University community without admission charge. For those events requiring tickets, a reduced fee is usually available for registered students. Brochures announcing committee events may be obtained at the Committee’s office in room 101 Zellerbach Hall or at the Information Desk of the Student Union.

- Music—a large selection of groups, including the Men’s Glee Club, the University Chorus, Repertory Chorus, California Band, and others which students may join for academic credit. Each week, also, there is a noon concert, open free of charge to the general public. The Symphony Forum is a program sponsoring record concerts on campus and providing for students inexpensive San Francisco Symphony tickets.

- Theater, Television, and Radio—The Department of Dramatic Arts offers course credit to any student participating, either in a performing or backstage capacity, in one of its excellent stage productions. There is also a Radio-Television Theater, and Orchesis, a workshop in the study and performance of modern dance.

- Debate—Varsity Debate and University Roundtable (the latter open to all regardless of experience), are the two debate organizations of the Berkeley campus, nationally respected for their excellence.
For further information about these and many other campus events, please consult the Information Desk in the Student Union.

Special Interest Clubs on Campus Besides regular ASUC-sponsored activities, there are over 150 organizations on campus serving special interests and abilities. In the spring and fall of each year, an Activities Fair is held in the Student Center Plaza to acquaint students with many of these organizations and to give them an opportunity to join.

Academic and professional societies, including clubs organized by many of the schools and departments, as well as national professional fraternities, provide students with an opportunity for seminars, discussions, lectures, tutoring services (both giving and receiving), and communication with members of an academic or professional field. Honorary academic societies are open to students of outstanding scholastic ability. These groups include: Tower and Flame (lower division); Honor Students’ Society (upper division); Phi Beta Kappa (a national society of historical renown, open by invitation to the top seniors in nonprofessional fields); and others, including California Club, Gavel and Quill, and various groups for men and women separately. Most of these groups offer tutoring services.

Hobby and recreational groups abound—including folk dance, hiking, sailing, skiing, photography, and travel clubs, and hundreds of others.

While the University, as a State-supported institution, does not offer chapel services or religious activity on campus, there are more than 35 churches and student religious clubs located within a few blocks of the campus.

Foreign Students' Groups The ASUC International Relations Board, comprised of various member councils, is an organization designed to promote among all students an understanding of international affairs. The Board sponsors programs for international correspondence, tours in foreign countries, and cultural activities on campus.

International House International House is a coeducational residence and program center for American and foreign students, primarily at the graduate level. Its activities include cultural and social events, home hospitality and educational tours. The program is designed to promote better understanding between all nationalities. For application and further information, write or call International House, University of California, Berkeley, California 94720; telephone number (area code 415) 848-6600.

Fraternities and Sororities Membership in a fraternity or sorority is by invitation after a period of “rushing.” Those interested should apply through the Interfraternity Council for men, or the College Panhellenic Association for women, both located in the Office of the Dean of Students, 201 Sproul Hall. This office will supply general information regarding program and costs.

Military Information

This section discusses certain aspects of military service as they relate to student life, including Selective Service obligations, ROTC programs, and services to veterans.
Selective Service Regulations* Students subject to Selective Service regulations should obtain information from their local boards or the Selective Service Counselor located in Dean of Students Office, 201 Sproul Hall.

Aids to Veterans Students with questions concerning educational benefits under federal (including new legislation) or California state programs should inquire at the Office of Financial Aids, 2539 Channing Way.

Aids to Veterans and Dependents of Veterans Veterans may secure application forms (VA Form 21E-1990) from the Veterans office at colleges and universities, from local representatives of veterans organizations, from the Red Cross, or from Veterans Administration offices. The application should be accompanied by a copy of the veteran’s DD-214 (Report of Separation from the Armed Services) and, if applicable, all the documents necessary to support evidence of dependency. Unless the veteran has his application on file with the Veterans Administration within 15 days after the beginning date of classes, he will not be eligible for benefits from the first day of classes. Students with questions should inquire at the Office of Financial Aids.

Reserve Officers Training Corps The University of California, as a land-grant institution established by the Morrill Act of 1862, offers courses and programs in military training. This training is voluntary, and affords a young man the opportunity to qualify for a commission as an officer in the Army, Marine Corps, Navy, or Air Force while completing his college education. Reserve Officer Training Corps (ROTC) courses are offered by three departments: Aerospace Studies (Air Force), Military Science (Army), and Naval Science (Navy and Marine Corps). The departments furnish all necessary textbooks, uniforms, and supplies, and arrange draft deferment. The programs carry a monthly stipend in the junior and senior years, and additional financial aids are available to qualified students. Individual programs are summarized briefly as follows:

Air Force Four-Year Program—Open to a limited number of qualified male freshmen. During the freshman and sophomore years students attend AFROTC classes as described on page 145. After the sophomore year students may compete for the Commissioning Program and if selected attend four weeks of field training at an Air Force base, and participate in AFROTC during their junior and senior years. Upon graduation and successful completion of AFROTC the student qualifies for a commission as a Second Lieutenant in either the Air Force Reserve or Regular Air Force (Distinguished Graduate) and active duty in an officer specialty related to his academic preparation. For nonflying personnel the active duty commitment is four years, and for flying personnel it is five years after completing Air Force flying training. Scholarships are available to well-qualified cadets in the four-year program. These cover full tuition, laboratory expenses, registration fees, and an allowance for books, and $50 per month in nontaxable pay.

Two-Year Program—A two-year program is offered to undergraduate or graduate students. Selected applicants complete six weeks of field training during the summer preceding the Commissioning Program. Two academic years are required to complete the program as described on page 146. The commissioning and active duty procedures are as described above. Cadets are paid $50 per month during the two academic years.

* Policies regarding student deferments may change during an increased military call-up. Practices vary with the local board, and the student should be in contact with his board.
Flying Training—Applicants who are interested in flying training are particularly encouraged to apply. Those qualified receive free flight training during their last year in AFROTC and may qualify for a private pilot's license. For additional information on any phase of the AFROTC program, please consult the Department of Aerospace Studies, 47 Harmon Gymnasium.

Army Three programs:

1. Four-Year Program Open to male freshmen and to other male undergraduates who will be in academic residence for a time sufficient to complete the program. During the last two years of the program, students receive a $50 monthly stipend; admission to this phase of the program is competitive. The student completes a six-week summer camp between the third and fourth year; summer camp pay is approximately $172 per month plus travel expenses. Upon graduation he accepts, if offered, a commission in the Army Reserve; outstanding students are eligible for a commission in the Regular Army. Active duty obligation for Reserve officers is two years. Entry on active duty may be delayed for graduate study and participating students may receive draft deferments.

2. Two-Year Program Substitutes an additional six-week summer camp, between the sophomore and junior years, for the first two years of military science classes. Open only to students with upper division or graduate standing and intended principally, but not exclusively, for highly qualified transfer students. Admission is competitive. Other aspects of this program are identical to those of the four-year program. Interested students should apply at the Department of Military Science early in the winter quarter of their sophomore year.

3. Scholarship Program
   a. Four-Year Awarded annually, by nationwide competition among high school seniors, to outstanding prospective college students. Those selected receive $50 monthly stipend, payment of tuition (if any) and incidental and laboratory fees, and reimbursement for textbook purchases. Upon graduation, the student accepts, if offered, a commission in the Army Reserve; outstanding students are commissioned in the Regular Army. Active duty obligation is four years. Interested prospective University students should consult their high school guidance counselor for details.
   b. Two-Year Awarded annually to outstanding cadets who are completing their second year of the four-year program described above. Benefits and service obligations are identical to those described above for four-year scholarships.

For additional information on any of the programs and their benefits, please consult the Department of Military Science, 151 Harmon Gymnasium.

Navy and Marine Corps Three programs:

1. Four-Year Contract Program Open by application to qualified freshmen; the student receives $50 monthly during the junior and senior years, plus supplies, books, and expenses for Naval Science courses. He completes two summer training sessions prior to the senior year. Upon graduation he is eligible for commission in the Navy or Marine Corps Reserve, and serves three years of active duty.

2. Two-Year Contract Program Application for this program is made during the winter quarter of the sophomore year. Selected students enter into the contract program in the fall quarter of the junior year after attending a special six-week summer session. Students must enlist in the Naval Reserve in the fall quarter of their junior year. The remainder of the program is identical to the four-year contract program.

3. Regular Program Open by nationwide competition to qualified freshmen; candidate receives $50 monthly for four years, plus all supplies, books, and tuition. He completes three summer training sessions, about six to eight weeks each. Upon graduation, he is eligible for a commission in the Regular Navy or Marine Corps, and serves four years active duty. Commissions are also available in the U. S. Naval Supply Corps and Civil Engineering Corps. For additional information please consult the Department of Naval Science, 25 Callaghan Hall.
Fees and Expenses

It is extremely important that a student carefully consider the total financing of his education, from his entering quarter to the completion of his degree objective. If financial help will be needed, beyond those funds which the student or his family are able to provide, the student should make the necessary applications for financial assistance well in advance of his enrollment. He should pay particular attention to early deadline dates of application for scholarships and National Defense Education Act loans. While the needs and resources of each student differ, the University can provide a general list of fees and expenses normally encountered (see Schedule A).

SCHEDULE A: TABLE OF FEES AND EXPENSES

Fees are subject to change

Certain fees are paid at the time of registration by each student. These fees are listed and described below.

<table>
<thead>
<tr>
<th>Student Category</th>
<th>Summer Quart. 1969</th>
<th>Fall, Winter, or Spring Quart. 1969-70</th>
<th>Fall or Spring Terms 1969-70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident Undergraduate</td>
<td>$88.25</td>
<td>$108.25</td>
<td>$158.25</td>
</tr>
<tr>
<td>Nonresident Undergraduate</td>
<td>488.25</td>
<td>508.25</td>
<td>758.25</td>
</tr>
<tr>
<td>Foreign Undergraduate</td>
<td>495.75</td>
<td>517.25</td>
<td>771.75</td>
</tr>
<tr>
<td>Resident Graduate</td>
<td>85.50</td>
<td>105.50</td>
<td></td>
</tr>
<tr>
<td>Nonresident Graduate</td>
<td>485.50</td>
<td>505.50</td>
<td></td>
</tr>
<tr>
<td>Foreign Graduate</td>
<td>493.00</td>
<td>514.50</td>
<td></td>
</tr>
<tr>
<td>Resident Graduate, School of Law</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonresident Graduate, School of Law</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign Graduate, School of Law</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

EXPLANATION OF FEES AND EXPENSES

Required Fees

University Registration Fee—$100 per quarter ($80 for summer quarter, 1969); $150 per term, School of Law

Paid by all students. Covers normal expected usage of such facilities as laboratories, gymnasium, counseling and placement services, health service, etc.

Berkeley Campus Fee—Paid by all undergraduates in the amount of $8.25 per quarter, by students in the School of Law in the amount of $8.25 per term and by all other students in the amount of $5.50 per quarter.

Provide support for a wide range of activities sponsored by the Union Program and Facilities Board and the ASUC Senate, support The Daily Californian and other publications, cover use of the Union, and help pay costs of construction of the Union building.

Nonresident Tuition—$400 per quarter; $600 per term, School of Law

See rules on page 24 to determine whether this fee is applicable.

Foreign Student Health Insurance—$9 per quarter ($7.50 for summer quarter, 1969); $13.50 per term, School of Law

* Fees are subject to change.
Required of all students on nonimmigrant visas. Payment of the fee for three consecutive quarters (two terms in the School of Law) covers the student for the full academic year, including summer.

Additional Fees and Expenses

**Subject A Fee—$45**
Applies to those who are required to enroll in the Subject A course (see page 31).

**Athletic Privilege Card—$12**
Optional. Permits free admission or reduced rates to most University athletic events.

**Student Health and Life Insurance**
Optional, available through ASUC. Provides coverage, beyond normal service of the Student Health Service, in any of several standard health and hospitalization plans; has additional advantage of including student's spouse. Rates lower than normal adult rates.

**Books and Supplies**
Normally about $80–$90 a year average for liberal arts students, but runs occasionally lower or higher ($50–$200) for students in preprofessional or professional curricula. Consult schools or departments for details.

**Living Expenses**
University residence halls include room and board for about $985 yearly. Cooperatives are normally about $700 yearly. University-supervised residences are normally about $1,000 yearly. For those who wish to obtain private dwellings, expenses may be higher, though not necessarily.

**Entertainment and Miscellaneous Costs**
A student will need to take into account such things as laundry, cleaning, transportation, and personal effects. The San Francisco Bay Area has a tremendous variety of cultural and entertainment activities, to suit all tastes and interests, which should be considered in planning a budget.

**Total Estimated Expenses Per School Year**
The following approximates the total budget for three quarters. This estimate is based on fees and expenses for single undergraduate students:

- **Resident Students**: $1,970.00
- **Nonresident Students**: $3,170.00

**Financial Aids**
The University extends to students a variety of opportunities for financial aid. These are made available through donations and bequests by alumni and friends of the University, as well as by government agencies and special foundations and organizations. The ways in which a student may obtain financial aid include:

- **Undergraduate Scholarships** These are awards made on the basis of academic achievement and financial need. An overall grade average of B is the minimum required for consideration for a scholarship. A scholarship application, for an academic year, (or any one or more quarters of it) must be filed between October 1 and January 15 of the preceding academic year by all students. A parents' confidential statement must be filed by December 15 of the preceding academic year. Students who apply for a scholarship may apply for other forms of financial aid.
aid on an accompanying application form. For further details, consult the Committee on Undergraduate Scholarships and Honors, 2539-A Channing Way, University of California, Berkeley, California 94720.

**California State Scholarships** These are awarded by the State. At the University of California at Berkeley they are in the amount of $300 and apply toward the registration fee. Application forms and information may be obtained from the California State Scholarship and Loan Commission, 520 Capitol Mall, Sacramento, California 95814, beginning about October 1 for schools for the following year. Students are urged to apply for these.

**Fellowships and Graduate Scholarships** For information on fellowships and graduate scholarships, please consult Chapter III, the Graduate Division.

**Prizes** These are awarded on the basis of competition or outstanding ability in some area of creative or scholarly achievement. Prizes include awards for poetry, short stories, essays, and music composition. New undergraduates entering in freshman standing and taking at least 12 units for credit are eligible for the Kraft Prize for excellence in grades in their first quarter at the University. For further information on all prizes, please consult the Committee on Prizes, Room 9, 2543 Channing Way, Berkeley, California 94720.

**Loans** University and National Defense Education Act loan funds are available to student applicants who demonstrate financial need and present a satisfactory repayment program. Students are not eligible for University loans in their first quarter of enrollment. However, NDEA loans are open to first-quarter students, as well as continuing students.

Any regularly enrolled undergraduate or graduate student, or applicant for admission is eligible to apply for the NDEA loan who: (1) is a United States citizen or a permanent resident of the United States, (2) will be satisfactorily pursuing at least a half-time program of academic work during the period for which the loan is granted, and (3) can establish a basic financial need in order to continue his education. It is necessary to reapply for the loan each academic year (three quarters), or summer quarter, in which a loan is desired. The summer quarter is considered a supplemental period and must be applied for separately. Repayment period (with simple 3% interest) starts nine months after a student ceases to be at least a half-time student, with the first annual installment due one year later. Forgiveness up to 50% of the total loan is given to teachers from the elementary through the college level, or up to 100% to those teaching in a poverty area. Undergraduate students are eligible to apply for a maximum of $1,000 in an academic year and graduate students are eligible to apply for a maximum of $2,500 in an academic year. Undergraduate students may borrow a total of $5,000, and graduate students a total of $10,000. Application forms are available from the Office of Financial Aids, 2539 Channing Way, by mail or in person.

All applicants for NDEA loans for fall 1969, winter 1970, or spring 1970 quarters whose completed applications are submitted by January 15, 1969 will be notified of awards by about April 15, 1969. Applications for fall 1969, winter 1970, or spring 1970 will be accepted until May 1, 1969, and applicants will be notified of awards about August 22, 1969, if there are funds remaining after the initial group has been awarded.
Educational Opportunity Grants  Educational Opportunity Grants are intended to help students of exceptional financial need who would otherwise be unable to enter or remain in college. The grants are administered by the Office of Financial Aids. Undergraduate students who apply for a NDEA loan or undergraduate scholarship are automatically considered for Educational Opportunity Grants.

The grant may not be less than $200 or more than $1,000 each academic year, depending on parental contribution and determined need. Grants are renewable if the student has continued financial need and maintains satisfactory academic progress. The grant may not exceed 12 quarters of full-time study. Preference is given to freshman students.

Work-Study Program  The Work-Study Program, now under the Higher Education Act of 1965, is administered by the Office of Financial Aids. Freshmen through graduate students are invited to establish eligibility at this office. Job priority is given to students who are from low-income families. Students may average fifteen hours of work per week while classes are in session and full-time during vacation. Work off campus relates primarily to major social problems through ninety-five public and private agencies. Work on campus comes under academic and administrative departments.

FEDERAL INSURED STUDENT LOAN PROGRAM  Students who need funds to finance their college education may be eligible for a Federal Insured Student Loan as provided under the provisions of the Federal Higher Education Act of 1965 as amended.

Qualified students enrolled in a full-time program at the University of California may obtain loans from participating private commercial lenders upon recommendation of the University. Such lenders may be banks, credit unions, and savings and loan associations.

Undergraduate and graduate students may borrow up to $1,500 for three quarters and up to $2,000 for four quarters. Students with an adjusted family income of less than $15,000 a year pay no interest while attending the University on a full-time basis. The federal government pays the lender interest (7 percent maximum) during this time. The student begins repayment to the lender when he graduates, ceases to be full-time, or withdraws from school. There is a nine-month grace period. When repayment begins, the student pays 7 percent simple interest.

Other Financial Aids  For additional opportunities for financial aids, see Student and Alumni Placement Center, Aids to Veterans, Aids to Dependents of Veterans, and Reserve Officer Training Corps.

Living Accommodations  There is a wide selection of housing at the Berkeley campus. Admission to this campus does not guarantee housing reservations. Rather, students should acquaint themselves, well in advance of their enrollment, with the various living arrangements. Housing Office, 2401 Bowditch Street, is prepared to send descriptive material upon request.
More than 3,000 men and women live in University residence halls. An equal number live in fraternities, sororities, cooperatives, and boarding houses. There are apartments for 920 married students in the University Village. The remaining students live in rooms and apartments in the community. Students consider their individual wishes and needs and select their own accommodations.

**University Operated Residences** The University has 19 residence halls for men and women. Four of these halls are for upper division and graduate students, and one, Mitchell-Peixotto, houses a residence program for entering freshmen in Letters and Science. Students may request applications as early as six months prior to entrance. Applications are mailed in April for the fall quarter, November for the winter quarter, and January for the spring quarter, to students requesting them. Residents entering in the fall will have contracts for the period of three quarters, fall, winter, and spring. Assignments are based on prompt application, class in the University, home address, hall choice, and admission to the University. Contract fees may be paid in full in advance or by installments. A brochure describing the residence halls in detail is sent to applicants.

**Privately Operated Residences** There is a selection of privately operated residences (boarding houses, cooperatives, and apartments) adjacent to the campus. Students make reservations directly with these groups. In the cooperatives, moderate rates are made possible by the agreement of the residents to contribute five to seven hours of work a week to help maintain and operate the houses. A brochure entitled “Living in the Community” is available upon request to the Housing Office.

**University Village for Married Students** The University operates 920 apartments for married students in Albany, about 3 miles from the campus. There are one- to three-bedroom apartments, most of which are unfurnished, and the rent is from $54 to $105 a month, including utilities. There is a waiting list for these units, and married students should apply early to add their names to this list.

**Fraternities and Sororities** Please see page 62

**International House** Please see page 62

**Rental Housing in the Community** Housing Services has card files of rental listings for students, staff, and faculty. Accommodations are not listed unless they are available to all students without regard to race, color, or creed. These rentals are not inspected by the University, but are listed as a service to students. Lists of rentals are not mailed, since the listings change daily. Personal inspection is recommended before any rental is accepted. A hotel-motel list will be sent upon request so that students may arrange for temporary accommodations while they look for housing.

There are street maps and rental advice guides available at Housing Office. Most rentals require written agreements and academic or calendar year leases. All contracts should be read with care, so that both students and landlords are in agreement about the terms, fees, and obligations, as well as rules governing residence.

The rental listings include rooms, apartments, flats, and houses. Most students share rentals to reduce the cost, since the campus is in a high rent area.
The present general practice is to look for rentals in early September so that the rental period will coincide with the academic calendar.

The University Press

The University of California Press is one of the largest university presses in the country. It publishes scholarly books, about forty monograph series, and a dozen journals. The separate books (including a line of quality paperbacks) number about one hundred and fifty each year. The press serves all campuses of the University equally; its publishing program carries the work of the faculty beyond the campuses themselves.

The Alumni Association

More than 55,000 graduates of the University find the California Alumni Association a means of working for the continued welfare of the University and its student body. The California Alumni Foundation provides financial assistance to more than 300 students each year, as well as funds for research, library acquisitions, and campus improvements. Members also receive advance application for football tickets, reduced rates on summer camps at Pinecrest and the Tahoe Alumni Center, and use of the facilities of the headquarters of the Association, Alumni House, where students and alumni alike are always welcome. The California Monthly magazine and a program of alumni meetings enable members to remain in close touch with the University and with one another.

Education Abroad

Undergraduate students at Berkeley enjoy a number of opportunities to study abroad at the following study centers around the world:

- Chinese University of Hong Kong
- Georg-August University, Goettingen, Germany
- International Christian University, Tokyo
- American University of Beirut
- Hebrew University, Jerusalem
- University of Bordeaux, France
- University of Lund, Sweden
- University of Madrid, Spain
- University of Padua, Italy
- Universities of Birmingham, St. Andrews, Sussex, and Edinburg, United Kingdom
- Trinity College of Dublin University, Ireland
- Mexico City Center
- University of Warwick, England (History Exchange Program)
- Intercollegiate Center for the Study of Classics in Rome

Students must have a minimum of 2.75 overall grade-point average. For most programs, students are expected to complete with a grade of B the equivalent of six quarters of the language of the country in which they plan to study. Exceptions to this requirement are for the programs in Japan, Hong Kong, Israel, Lebanon, Sweden, and Rome.

Students receive full unit credit for the work taken overseas towards their degree. However, the number of courses students may take abroad in their major and the extent to which the work overseas satisfies breadth requirements, is subject to the approval of the student’s department and/or college.

The undergraduate programs are intended primarily for juniors. Students who wish to participate in the program as seniors should be aware of the senior
residency requirement of their College which usually requires additional study at Berkeley for two quarters upon completion of the year abroad.

The estimated cost of study abroad varies according to the centers. University scholarships, loans, and grants may be used to finance the year abroad.

Provision for graduate study has been included for most of the programs. Graduate students who wish to apply to study abroad on independent research projects, and who have satisfactorily completed a year of full time graduate study at Berkeley, may do so if they obtain necessary approvals. For further study abroad opportunities for graduate students see the Graduate Division section of this catalogue.

Interested students should consult with their academic advisers and with the study abroad counselors in the Education Abroad Office, Room 104-A, Building D, 2538 Channing Way, which is under the direction of William McCormack, Ph.D.

Informal faculty-student conference—India
V. Colleges and Schools

For purposes of administration and instruction, the University is divided into a number of academic and administrative subdivisions, ranging from departments, colleges, and schools to a variety of research centers and institutes. At Berkeley, there are eighteen major academic subdivisions—the Graduate Division (see Chapter III), five colleges, and twelve schools:

<table>
<thead>
<tr>
<th>Colleges</th>
<th>Schools</th>
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<tbody>
<tr>
<td>Agricultural Sciences</td>
<td>Journalism, Graduate</td>
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<tr>
<td>Chemistry</td>
<td>Law</td>
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<tr>
<td>Engineering</td>
<td>Librarianship</td>
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<td>Environmental Design</td>
<td>Optometry</td>
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<tr>
<td>Letters and Science</td>
<td>Public Affairs, Graduate</td>
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<td></td>
<td>Public Health</td>
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<td>Social Welfare</td>
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</table>

A college accepts students directly from high school or as transfers from another institution and offers undergraduate instruction, normally as a four-year program, leading to the bachelor's degree; however, departments in all the colleges offer programs of study beyond the bachelor's degree, in conjunction with the Graduate Division. The colleges are designed to provide the student with a thorough background in one or more fields of study, and to give him some acquaintance both with allied fields and with general fields of knowledge. Although a student may take some courses in another college or school, his degree requirements are determined by the deans and faculty of the college in which he is enrolled. The College of Letters and Science emphasizes the study of the general academic areas for their own sake, whereas the other colleges emphasize the study of these areas in relation to applied arts and sciences.

A school normally begins instruction at the upper division or graduate level and is designed to provide a student with training preparatory to a specific profession. The school presumes its students to have acquired before entrance some background in general academic areas. The degrees offered by the schools are accredited by statewide and national boards and associations for the various professions, and normally allow the graduating student a direct entry into his field.

Each of the colleges and schools has its own administrative officials and its own regulations for earning degrees, and since each undergraduate student at the University belongs either to a college or a school he is expected to satisfy requirements for the degree on three levels: University, college or school, and field of concentration. This chapter provides a broad survey of the colleges and schools and their degree programs. For further information, see the individual school or college Announcements.

[COLLEGE OF AGRICULTURAL SCIENCES]

The College of Agriculture at Berkeley is as old as the University itself. The Organic Act of March 23, 1868, by which the California State Legislature established the University, also required the creation of the College of Agriculture
as the first duty of the Board of Regents. In 1966 the name of the College was changed to College of Agricultural Sciences to more adequately describe its present program.

Agriculture is both a broad science and a big business, where opportunities for both men and women are plentiful. Interesting employment is now offered to the qualified person in such fields as research, industry, business, education, communications, conservation, recreation, and public health. Agriculture is no longer limited to rural communities.

The College offers undergraduate instruction leading to the Bachelor of Science degree and, when completed, opportunities for immediate employment exist in most fields.

Seven majors are offered under a single curriculum—Agricultural Sciences. They are listed in the section concerning general requirements for the bachelor’s degree. Related curricula in the College are also available in preforestry and preveterinary. Courses in range management will be offered by the School of Forestry and Conservation (See their Announcement). In general, the student studying for the B.S. degree may take the first two years on any campus of the University where undergraduate instruction is offered, or at any other accredited institution of higher learning.

Students wishing additional training after the B.S. degree may pursue studies leading to the M.S. and the Ph.D. degrees, and thus qualify for academic careers in a college or university, or other positions of responsibility in public or private industry.

**Admission**

Applicants to the College of Agricultural Sciences must meet the general University requirements for admission, given in Chapter I. It is recommended that high school preparation for work in the College should include: algebraic theory (½ or 1 year); trigonometry (½ year); physics (1 year); chemistry (1 year); and, for those proposing to major in forestry, mechanical drawing (½ year).

**General College Requirements for the Bachelor’s Degree**

The Bachelor of Science degree is awarded to those candidates who satisfy the following conditions: (1) general University requirements (see Chapter II); (2) at least 180 units of University work (not more than 6 units may be in lower division physical education courses); (3) of the above total, 54 units must be in upper division courses, those numbered 100–199; and (4) completion of a curriculum major in the College of Agricultural Sciences.

The majors in the Agricultural Sciences Curriculum are described in detail in the course section of this catalogue. They are: agricultural economics; agricultural science; dietetics (Nutritional Sciences); entomology (Entomology and Parasitology); food and nutritional sciences (Nutritional Sciences); genetics; and soils and plant nutrition. Preparation for graduate work in plant pathology is offered under the agricultural science major. The preforestry program, although administered by the College of Agricultural Sciences, is described under the Forestry and Conservation section. The College also administers a preveterinary
curriculum for those students who are preparing for subsequent work in the School of Veterinary Medicine at Davis. The Dean’s Office, 101 Giannini Hall, will provide the name of an adviser and general information about the program. For details concerning the complete program, consult the Dean of the School of Veterinary Medicine, University of California, Davis.

The staff in the Office of the Dean of the College of Agricultural Sciences will assist the student in selecting a major. Faculty advisers in the student’s field of interest are available the year around to help in planning programs. For further details, see the ANNOUNCEMENT OF THE COLLEGE OF AGRICULTURAL SCIENCES, available without charge from the Office of the Dean of the College.

**Study-List Programs** Students are required to have the approval of their faculty adviser each quarter, prior to final endorsement of the study list by the Dean. This approval includes selection of courses in the program and any variation from the normal minimum (12 units) or maximum (18 units) course load.

**Graduate Programs**

Graduate instruction leading to higher degrees is available in the following fields—they are described in the course section of this catalogue: agricultural chemistry; agricultural economics; biophysics (Cell Physiology and Soils and Plant Nutrition); comparative biochemistry (Cell Physiology, Nutritional Sciences, and Soils and Plant Nutrition); entomology (Entomology and Parasitology); food science (Nutritional Sciences); genetics; microbiology (Nutritional Sciences and Soils and Plant Nutrition); nutrition (Nutritional Sciences); parasitology (Entomology and Parasitology); plant pathology; plant physiology (Cell Physiology and Soils and Plant Nutrition); and soil science (Soils and Plant Nutrition).

In addition to studying with a well-qualified faculty, the graduate student is afforded the opportunity to work with members of the research staff of the Agricultural Experiment Station. A number of research assistantships are available to outstanding students, as well as fellowships, graduate scholarships, and teaching assistantships.

For further information, consult the ANNOUNCEMENT OF THE COLLEGE OF AGRICULTURAL SCIENCES, available free of charge, and Chapter III of this catalogue.

**Facilities**

Among the special facilities available to students are the Agriculture and Giannini Foundation libraries which house distinguished collections of source material in agriculture and agricultural economics; the 6.2-acre Oxford Tract which contains open plot areas, greenhouses, laboratories and environmental control cabinets; related facilities at the Gill Tract in nearby Albany, as well as special libraries, electron microscopes, computers, and a wide range of equipment and specialized laboratories maintained by the departments in Giannini, Hilgard, Morgan, Mulford, and Wellman (formerly Agriculture) halls on the main campus.
Student Activities

Students in the College of Agricultural Sciences participate not only in the general student affairs of the University but also in activities of their own. Departmental clubs, social as well as professional in character, are open to both graduate and undergraduate students. The informal atmosphere of the College encourages a friendly student-faculty relationship.

The College of Chemistry was established in 1872, and the first building on the Berkeley campus, South Hall, was designed as a chemistry laboratory. In the early years it was the college for practically all students desirous of scientific training, there being no separate college for physics, geology, and biology. In 1894 a separate College of Natural Sciences was created, which was in 1915 merged into the present College of Letters and Science, but in neither of those reorganizations was the College of Chemistry absorbed. Consequently, since 1894, students have had the choice of a chemistry major in the College of Chemistry, leading to a B.S. degree through a curriculum which emphasizes advanced work in the sciences, or in the now College of Letters and Science, leading to an A.B. degree through a curriculum with a greater proportion of courses in the humanities and social sciences.

Course offerings in chemical technology began in 1912, but not until 1955 did chemical engineering become formally a separate department. Today the College of Chemistry is a two-department college: the Department of Chemistry and the Department of Chemical Engineering.

Admission and Degree Requirements

For information on recommended high school preparation for admission, as well as specific requirements for degrees, see the respective Departments of Chemistry and Chemical Engineering.

Special Programs

There is an optional Cooperative Work-Study Program in which students in chemistry and chemical engineering may participate. Details may be obtained from the Office of the Dean of the College of Chemistry.

Facilities

The present College of Chemistry occupies a group of buildings at the east edge of the campus, with undergraduate and graduate student laboratories, shops, lecture rooms, and offices having a total floor area of some 270,000 square feet. Additional research space is available in the Giauque Low-Temperature Laboratory, the Laboratory of Chemical Biodynamics, Lawrence Radiation Laboratory, and the Inorganic Materials Research Laboratory. Its working library collection has about 16,580 volumes and 323 journals. It offers not only curricula leading to undergraduate and graduate degrees in Chemistry and Chemical Engineering, but also the basic chemistry courses for students in all other
curricula, including those students preparing for careers in engineering or in medicine.

**COLLEGE OF ENGINEERING**

The College of Engineering offers programs in a wide variety of engineering fields, preparing the undergraduate and graduate for career work in engineering design, development, research, and teaching. The programs are based on the concept that the engineer must be well grounded in the sciences and in social and humanistic studies, with a full command of the principles and practices of his profession, as well as an awareness of the economic factors in engineering.

Four-year undergraduate curricula are offered in the following professional fields: civil, electrical (and computer sciences), industrial (and operations research), and mechanical engineering, and materials science (ceramic engineering and metallurgy). Each of these curricula is administered by a separate department within the College, and each emphasizes a core program of science and engineering subjects related to the particular engineering field. In addition, there is a curriculum in Engineering Science with programs in bioengineering, engineering geoscience, engineering mathematical statistics, engineering mathematics, and engineering physics. All of the above curricula and programs lead to the Bachelor of Science in Engineering. Some undergraduate courses are also given in the fields of naval architecture and of nuclear engineering.

Students with distinguished scholarship (B average or better, particularly in upper division courses) are encouraged to enter graduate study. Graduate programs are offered leading to the Master of Science and Doctor of Philosophy degrees for study emphasizing engineering applied sciences, and Master of Engineering and Doctor of Engineering degrees for advanced professional studies of design and development. Fields of study include civil, electrical (and computer sciences), industrial (and operations research), mechanical, and nuclear engineering, materials science, engineering geoscience, and naval architecture. Students with distinguished undergraduate scholarship in majors of mathematics or physical science may enter the graduate program in some of the engineering fields.

**Admission**

Applicants to freshman standing in the College must satisfy general University requirements as outlined in Chapter I. High school preparation for study in engineering includes the following: algebra (2 units); plane geometry (1 unit); trigonometry (½ unit); physics or chemistry, preferably both (1 or 2 units). Advanced mathematics courses are acceptable if they include the mathematical topics listed above. Deficiencies in any of the above subjects will delay the normal course of study. It is suggested that an engineering student also include a minimum of 1 unit of high school mechanical drawing as part of his preparation for the study of engineering since graphic communication is an essential part of engineering.

For admission to advanced standing, see Chapter I, and also the information below on admission to the upper division.
Lower Division Program

For the first two years, the program is fairly uniform for all curricula, emphasizing the fundamentals in science, mathematics, and engineering, and providing a background in humanities and social sciences. Specific requirements are as follows.

**Basic Science Courses** Mathematics 1A–1B–1C, 11C, 12A–12B or Mathematics 11A–11B–11C, 12A–12B for students who have had analytical geometry; and Chemistry 1A–1B–1C; Physics 4A–4B–4C–4D–4E.

**Electives** Should include at least 15 units of humanities and social sciences and must include (with the exception of engineering science majors) a two-quarter sequence of one of the following: Anthropology 2–3; Art 1A–1B–1C–1D; Classics 10A–10B–10C; Comparative Literature 1A–1B; Economics 1–3; English 1A–1B; History 4A–4B–4C–4D, 17A–17B–17C–17D; Philosophy 2–4; Political Science 1–2; Psychology 1–30; Social Science 1A–1B; Speech 1A–1B.

Electives must also include the following, according to the intended upper division major:

**Civil Engineering:** Engineering 28, 45, and Civil Engineering 10.

**Electrical Engineering and Computer Sciences:** Engineering 1, 17, and 45. Students with a special objective, as expressed in writing by the student and approved by the adviser and the College Committee on Undergraduate Study may substitute for Engineering 45 one of the following courses or sequences: Biology 1A–1B–1C, Chemistry 5, Chemistry 8A–8B, Geology 5A–5B, Medical Physics 10, Physiology 1. If a sequence is listed, the sequence must be completed to satisfy the Engineering 45 requirement.

**Industrial Engineering and Operations Research:** Engineering 1, 17, and 45.

**Mechanical Engineering:** Engineering 1, 17, 28, 36, and 45.

**Materials Science:** Engineering 36 and 45.

**Engineering Science:** English 1A or Speech 1A; course 3 (or the high school equivalent) of French, German, or Russian, and at least 9 units of technical electives, restricted as follows according to the field of specialization:

**Bioengineering:** Biology 1A–1B–1C.

**Engineering Geoscience:** Geology 5A–5B.

**Engineering Mathematical Statistics:** unrestricted.

**Engineering Mathematics:** unrestricted.

**Engineering Physics:** unrestricted.

**Course Credits** A total of 90 units must be completed in the lower division.

**Upper Division Programs**

Admission to the upper division is required for all students in the College before they may take upper division engineering courses. The transfer student must satisfy the general University requirement for advanced standing admission, outlined in Chapter I. All students entering the upper division must present
satisfactory grades in the basic sciences, mathematics, and engineering courses of the lower division.

In addition, all students entering the upper division must show satisfactory completion of 84 quarter units of courses acceptable by the University, including the following subjects: analytic geometry and calculus (18 units); chemistry for engineering and science students (12 units); physics for engineering and science students (15 units); engineering subjects such as graphics, properties of materials, surveying, measurements, analytical mechanics, circuit theory and electronic devices, and computers (15 units); social sciences and humanities (9 units); and other courses in engineering, natural and social sciences, and humanities (15 units; 9 units may be in humanities and social sciences and none may be in military science or physical education). A student admitted to the upper division who has completed the above minimum is not required to take additional lower division courses, except those prerequisite to upper division courses in a particular curriculum, or those lower division engineering or special science courses required in the curriculum, as outlined earlier.

The upper division curricula and programs are described in detail under the various Engineering departments in the course section of this catalogue, and in the Announcement of the College of Engineering.

Special Regulations

The College of Engineering has special regulations concerning scholarship, residence, and degree requirements, which supplement or supersede general University regulations. These are as follows:

A student is subject to dismissal who (1) does not have a minimum C average for all work undertaken in the University (2) does not obtain a minimum C average in each quarter.

Engineering science majors must maintain a minimum grade-point average of 2.75 in the lower division and a minimum grade-point average of 2.50 in the upper division.

Admission to upper division courses offered by the College of Engineering requires upper division status in engineering for students enrolled in the College.

Students may not enroll in more than 18 units, or fewer than 12 units, in a given quarter without special approval of the Dean.

A student must have a minimum C average in all upper division technical courses required in the curriculum and must demonstrate proficiency in the use of English, in order to obtain the B.S. degree.

At least the final 45 units of a regular program in Engineering must be taken in residence on the Berkeley campus in order to obtain the degree, and all curriculum requirements must be satisfied.

All students must complete a total of 27 units of approved courses in humanities and social sciences, of which at least 9 units (4 units for Engineering Science majors) must be in upper division courses taken after admission to the upper division.

Regularly enrolled students, or those formerly enrolled and planning to return to engineering at this University, who seek degree credit for a course taken elsewhere, including University Extension, must receive permission from the Dean of College before enrolling in the course.

Graduate Study

The following degree designations are used in Engineering: Master of Science, Master of Engineering, Doctor of Philosophy, Doctor of Engineering.

For details on specific graduate programs, please consult the Announcement of the College of Engineering, and the Engineering departments in the course section of this catalogue. For general requirements of the Graduate Division, consult Chapter III.
Special Facilities, Programs, and Services

Cooperative Program  This is an optional program in which engineering students may alternate work and study periods to obtain actual industrial experience. The undergraduate in the cooperative program ordinarily requires five years to obtain his degree. At the graduate level the number and duration of work periods govern the extension of time for completion. Detailed information on participation, job opportunities, and typical student earnings is available at the Office of the Dean of the College of Engineering.

Engineering Research  Research at the University is closely integrated with the graduate engineering programs, and strongly influences the undergraduate programs. Engineering research programs are directly supervised by the faculty. Some research is supported by University funds and much is supported by grants and contracts with industrial organizations, foundations, and public agencies. The guiding principles behind these research programs (and behind acceptance of outside support) is faculty-student cooperation; activities that are not based on graduate student participation are discouraged. The College policy is to employ graduate students, and occasionally qualified undergraduates, in part-time research assistantships as the need arises. Over 500 students are currently so employed, in addition to those supported by scholarships, fellowships, traineeships, and other means.

Research activity at Berkeley and the Richmond Field Station, including projects supported by both internal and external funds, are coordinated and served by the Office of Research Services in the College of Engineering, except for the Electronics Research Laboratory, which contains its own service organization. Outside sponsorship of projects conducted by faculty and organized research units amounts to about $6 million annually. Additional funds are available to engineering researchers engaged at other scientific facilities outside the College of Engineering, including the Biomechanics Laboratory, the Computer Center, the Inorganic Materials Research Division of the Lawrence Radiation Laboratory, and the Space Sciences Laboratory. Organized research units within the College are:

- Electronics Research Laboratory
- Earthquake Engineering Research Center
- Operations Research Center
- Institute of Traffic and Transportation Engineering
- Sanitary Engineering Research Laboratory
- Sea Water Conversion Laboratory

The College also has two departmental research laboratories (Hydraulic Engineering Laboratory and Structural Engineering Laboratory), as well as research laboratories in every department serving various groups not affiliated with any of the above.

Continuing Education in Engineering

Through University Extension, a program of courses in engineering is offered on the University campuses and in communities throughout California where sufficient enrollment is assured. This program is designed to provide professional engineers an opportunity for review or for systematic study of new fields. Fields
of instruction (covering both practical and theoretical aspects) include: civil, electrical, materials, mechanical, and operations research.

Continuing Education in Engineering also arranges technical conferences and special short courses in selected engineering problems for specific groups. These are guided by the Faculty of the College.

**Student Activities and Services**

Various student and professional organizations supplement the program of studies. These groups seek to stimulate the growth of professional attitudes and to advance student welfare. Details about these and other activities and opportunities are available from the College.

**Research Facilities**

These are described in detail under Engineering in the course section of this catalogue, and in the **Announcement of the College of Engineering**.

**[COLLEGE OF ENVIRONMENTAL DESIGN]**

The College of Environmental Design is composed of the departments of Architecture, City and Regional Planning, Design, and Landscape Architecture. As the name "environmental design" suggests, it promises a synthesis of the fields which deal with the functional and aesthetic quality of man's surroundings. These fields are among the most complex of the arts and professions taught at this University, drawing upon research in technology, decision theory, and human perception and behavior as the bases of their environment. The College's graduate and undergraduate curricula are continually changing because man's environment changes. As more and larger metropolitan areas develop, as physical and social mobility increases, people's aspirations change. The physical form of the metropolis, as well as its institutions and services, must adapt to these new conditions and aspirations. As part of a great University, the College relies upon work in the humanities, the social and natural sciences, technology, and the other professions with which the environmental design fields are linked. Whether a student chooses a career in private practice, public service, or research, the satisfactions are immense. Above all, he has the experience of joint exploration with the faculty of subjects requiring a flexible intellect and fresh point of view. He will employ an intellectual as well as an intuitive approach—both essential to creativity.

Undergraduates entering the College for the first time will enroll in a four-year curriculum leading to the preprofessional degree of Bachelor of Arts with a major in either architecture or landscape architecture. Only students presently enrolled in the College will be permitted to complete the old curricula leading to the professional undergraduate degrees of Bachelor of Architecture and Bachelor of Landscape Architecture if they choose to do so. On the graduate level the College presently offers curricula leading to the Master of Architecture, Master of Landscape Architecture, Master of City Planning and the Doctor of Philosophy in architecture and in city and regional planning. The Master of

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*Students enrolled in the College must obtain approval from the Dean of the College if they plan to enroll in an Extension course. Degree subject credit in previous Extension courses is granted to entering regular students only upon approval of the Dean.*
Architecture degree will be the first professional degree applicable to requirements for state registration in architecture.

The undergraduate and graduate curricula of the Department of Design has been transferred to the College of Environmental Design. An undergraduate major leading to a similar Bachelor of Arts degree and a graduate major leading to the Master of Arts degree, emphasizing industrial and communications design and design theory, will be available in this College. The major will not be open to new students until this transition stage has been completed and a new curriculum adopted.

Undergraduate Admission and Requirements for Degrees

Applicants to freshman status in the departments of Architecture or Landscape Architecture should include in their secondary school programs the following subjects: Architecture: four years of mathematics; one year of physics or chemistry; and one year of freehand drawing. Landscape Architecture: three years of mathematics, including plane geometry and trigonometry; one year of chemistry; one year of freehand drawing; and one half-year of mechanical or instrumental drawing.

Detailed information on required courses and suggested programs in both of these curricula and the existing curriculum of the Department of Design is available in the Announcement of the College of Environmental Design, which may be obtained free of charge from the Office of the Dean or the departmental offices of the College.

Requirements and procedures for admission, registration, and enrollment are synonymous with those of the University in general.

The Bachelor of Arts Degree The four-year curriculum leading the to A.B. degree in the College of Environmental Design with optional majors in architecture and landscape architecture, is organized to give the student a broad general education as well as an introduction to the problems of environmental design. It is a preprofessional curriculum designed to orient the student to an understanding of the links between society and architecture, landscape and the community, for participation as a citizen in community affairs and development, or as an introduction to careers related to environmental development. It will serve the important function of preparation for professional study at the graduate level in architecture and landscape architecture for those who qualify for admission to the Graduate Division upon graduation with the A.B. degree.

The four-year curriculum presently being reorganized in the Department of Design will lead to a similar A.B. degree with a major in design, emphasizing industrial and communications design and design theory.

Qualifying Examination A qualifying examination is mandatory of all undergraduate students who intend to major in the departments of Architecture, Design, and Landscape Architecture. This examination, offered once a year in the fall, is designed to help the College to properly counsel students and to determine which students have the greatest potential for completing major requirements by testing of spatial and problem-solving abilities as well as
promise in the field. No students will be permitted to enter certain courses which are prerequisite to courses given by the departments of Architecture, Design, or Landscape Architecture except on the basis of this examination process.

Students entering in the winter, spring, and summer quarters will take the examination when it is offered in the fall following their admission to the University. In the meantime, such students will be able to pursue a full-time course of study to include elective and required courses in the humanities, languages, mathematics, and other sciences.

**Enrollment Beyond 195 Units** A student who has credit for more than 195 quarter units of university-level work will not be permitted to register in the College of Environmental Design without the approval of the Dean.

### Summary of Requirements for the A.B. Degree in the College of Environmental Design

**General University Requirements** These are Subject A and American History and American Institutions, and are discussed on page 31.

**College of Environmental Design Requirements** These are given only in brief; they are discussed in detail in the *Announcement of the College of Environmental Design*, available at 230 Wurster Hall.

**Unit Requirement** The student must complete at least 180 units. Of these, at least 80 must be in courses chosen from the College of Letters and Science List of Courses and at least 54 units in upper division courses chosen from the College of Environmental Design List of Courses. No more than 60 units in the courses of any one department will be counted toward the A.B. degree. Not more than 105 units of transfer credit will be counted toward the degree for students transferring from junior colleges.

**Scholarship Requirement** Candidates for the A.B. degree must have at least a C average in all courses undertaken in the University and all courses in the major program.

**Breadth Requirements** A minimum number of courses in each of the following general academic areas must be completed (courses acceptable in each area are listed in the announcement):

- Reading and Composition, 8 units in 2 courses.
- Foreign Language (in one language), 16 units in 4 courses or equivalent.
- Natural Sciences, 24 units in 6 courses (as specified for the departmental option).
- Other Humanities, 16 units in 4 courses.
- Social Science, 16 units in 4 courses.
- General Electives, 36 units
- General College Courses, 24 units

**Major Requirement—Architecture and Landscape Architecture:** The student must also complete the 40 units required in the departmental major as outlined by the departments of Landscape Architecture and Architecture who administer their major. These majors are described in the course section of this catalogue.

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* Not more than 16 units may be in the department of the selected departmental option. Not more than 18 units may be in Air Science, Military Science, or Naval Science. Not more than 3 units may be in Physical Education activity courses.

** These courses shall be from the approved list of the College of Environmental Design as specified for the departmental option.
Normally, transfer students, other than those from accredited schools of architecture or landscape architecture, will be required to take all courses in the major subject at the University of California, Berkeley. Courses numbered Environmental Design 3 and 4 must be taken in the first year of residence at Berkeley, subject to the completion of the qualifying examination (see Qualifying Examination, page 81). Students planning to transfer to Berkeley at the end of a two-year period at another institution will be able to complete all major requirements without loss of time if they have made regular progress in meeting the breadth requirements including the specified courses in the natural sciences.

Design: In the spring quarter, 1969, the College of Letters and Science discontinued admission to the major in design because the undergraduate major leading to the Bachelor of Arts degree was in the process of being transferred to the College of Environmental Design. Since the curriculum reorganization is in transition stage, only continuing students enrolled in the major before the end of that quarter may complete it if they make normal progress toward completion of the degree. The major will not be open to new students until this transition stage has been completed and a new curriculum adopted.

Graduate Study

Programs are offered leading to the master's degree in Architecture, Landscape Architecture, City and Regional Planning, and Design, respectively, and to the Ph.D. degree in Architecture and in City and Regional Planning. Application is made directly to the Graduate Division of the University; those interested in graduate study should obtain, from the Dean of the Graduate Division, the circular, ADMISSION TO GRADUATE STUDY, which outlines general University requirements for admission. For specific graduate programs and degree requirements in the environmental design fields, please refer to the course section of this catalogue and the ANNOUNCEMENT OF THE COLLEGE OF ENVIRONMENTAL DESIGN.

Facilities

The Environmental Design Library The library, located in 210 Wurster Hall, contains 41,695 volumes, 30,000 pamphlets, and over a thousand periodical titles in the design fields. Special facilities are available for display of visual aids, and the library services a slide and picture collection for the college faculty.

Teaching facilities in Wurster Hall include drafting studios, an architecture shop, ceramics and glass-blowing laboratories, printed and woven textile studios, sculpture studios for the Department of Art, photographic laboratory, and exhibition and seminar rooms.

The Blake Estate This land, 10½ acres of gardens and greenhouses, serves as a teaching and research laboratory for landscape architecture students.

The Institute of Urban and Regional Development Established in 1963, this institute focuses research attention upon problems of city, metropolitan, and larger regional development. Its Center for Planning and Development Research conducts research in city and regional planning, related social and technical processes, and administers a Laboratory for Design Research. The Center for
Real Estate and Urban Economics conducts research in real estate and land economics, supported by appropriations allocated by the State Legislature from the Real Estate Education Research and Recovery Fund. The staff of these centers includes University faculty and graduate student research assistants.

College of Letters and Science

The College of Letters and Science is an undergraduate nonprofessional college offering a great variety of programs which normally lead to the Bachelor of Arts degree in twelve quarters. The variety of programs is in response to the diverse needs and motivations of the students in the College, and to the educational goals set forth by the faculty. The fundamental aim of the College of Letters and Science is to increase man's understanding of nature and of himself. To achieve this understanding, students should have a comprehension of abstract thought, an appreciation of the structure of ideas, a feeling for style, and a basis for forming value judgments. There is no single program which every student should follow to achieve these objectives. The College seeks to provide a flexible yet thorough program of basic studies.

The student is required to attain reasonable proficiency in the use of English and at least one foreign language in order that he may communicate and absorb ideas effectively. He is required to explore the significant broad fields of human knowledge: the humanities, that he may possess an awareness of the intellectual achievements of mankind; the natural sciences, that he may awaken his interest in the nature of the world and its inhabitants; the social sciences, that he may attain a disciplined approach to the problems of individuals and society. Furthermore, he is required to gain some limited experience in specialization, focusing his attention on a specific subject of knowledge which he will be prepared to cultivate throughout his life, or which he may use as preliminary preparation for a career or as a basis for graduate study.

Admission and General Information

Requirements and procedures for admission, registration, and enrollment, are synonymous with those of the University in general. Please consult the preceding chapters for further details.

Classification of Students Regular students are classified as freshman, sophomore (upon completion of 45 units), junior (upon completion of 90 units), or senior (upon completion of 135 units). Special and limited-status students are described in Chapter I on page 20. These students, under direct supervision of the Dean of the College (215 Moses Hall), must have their study lists approved by him each quarter.

Preparation for Admission to Professional Schools A student enrolled in the College who plans to transfer to a professional school, either on the Berkeley campus or elsewhere, should consult the Announcement of the school of his choice as early as the beginning of his freshman year and plan his program to meet the admission requirements; however, while he is enrolled in the College he is held to the College requirements, including English reading and composition and foreign language. He must enroll in these courses even if they are not
required for admission to the professional school. If enrollment in the College of Letters and Science is continued beyond the end of the sophomore year, the student must apply for and gain acceptance in a major for the A.B. degree in the College. All subsequent programs must apply toward completion of that major.

University Extension Students in the College of Letters and Science seeking to apply for credit toward a degree for courses taken in University Extension must receive permission from the Dean of the College before enrolling in the courses.

The Experimental Collegiate Program The Experimental Collegiate Program of the College of Letters and Science was initiated in the fall semester 1965 as a two-year sequence. The sequence will be repeated in 1970–72. Enrollment was limited in each case to 150 incoming freshman students. The essential structural feature of the Program is that it abandons the course system and, instead, organizes the educational life of the student around the study of significant themes and problems.

The first year focuses on Greece during the Peloponnesian Wars and seventeenth-century England; the second year is concerned with the period of the adoption of the U.S. Constitution and contemporary America.

Studies in each period involve a wide range of material, a great deal of reading, writing and discussion, and the flexible use of lecture, seminar, and tutorial.

Participation in the program constitutes the student's full program except for one regular "outside" course each term. The student is expected to remain in the program for the two-year period and upon successful completion of the program and outside courses will achieve junior standing. The program itself carries 72 quarter units of credit, and satisfies the following College of Letters and Science requirements: reading and composition, social science, and humanities.

Completion of the first two quarters of the second year of the Program will satisfy the University requirement in American History and American Institutions.

Residential Program in History and Literature The Residential Program in History and Literature was instituted in the fall quarter 1968. Students reside in the Mitchell-Peixotto residence halls, which will be exclusively devoted to the program. Much class work, especially in discussion sections and tutorials, is conducted in the residence halls, although the student also attends lectures on campus. The central feature of the curriculum is the Sophomore Course, which involves the study in depth of the great novels and other works of eighteenth- and nineteenth-century Europe. These works are studied, in English or in the foreign language offered by the individual student (French, German, or Spanish), not only as masterpieces of literature but also as historical and social documents.

Summary of Requirements for the A.B. Degree

General University Requirements These are Subject A and American History and American Institutions, and are described in detail on page 31.
College of Letters and Science Requirements These are given only in brief; they are discussed in detail in the Announcement of the College of Letters and Science, available at 215 Moses Hall.

Unit Requirement The student must complete 180 units. Of these, 162 must be in courses on the Letters and Science List (see page 87); 54 of the 162 units must be in upper division courses, and at least 9 of the 54 units must be outside the student's major department. Eighteen units outside the List are permitted, under certain limitations. After 105 units toward the A.B. degree have been earned in all institutions attended, no further unit credit may be earned in a junior college.

Scholarship Requirement Candidates for the A.B. degree must have at least a C average in (1) all courses undertaken in the University; (2) all courses in the major program; and (3) all upper division courses in the major program. For regulations concerning passed or not passed enrollment, see the Announcement of the College of Letters and Science.

Breadth Requirements A minimum number of courses in each of the following general academic areas must be completed (courses acceptable in each area are listed in the Announcement of the College of Letters and Science):

- Reading and Composition, 2 courses.
- Foreign Language (in one language), 4 courses or equivalent.
- Natural Science, 4 courses (including at least one course in physical science and Social Science, 4 courses).
- Humanities, 4 courses.

Major Requirement. The student must also complete a major program chosen from the following:

Departmental majors—these are designed and administered by the individual departments, and may lead either to graduate study or to cultivation of a subject as an intellectual interest. These majors are described in the course section of this catalogue.

Group majors—these are interdepartmental programs, offered for students desiring a particular preparation for graduate study, or for students with interests somewhat broader in scope than are served by a departmental major. Group majors are described in the Announcement of the College of Letters and Science.

Field majors—for students with still broader interests, there is a choice of four programs in (a) biological science, (b) physical science, (c) social science, (d) humanities. The four field majors are described in the Announcement of the College of Letters and Science.

Individual majors—these are programs planned by the individual student with the advice and approval of a faculty adviser and the Dean of the College; these serve the interests of superior students with intellectual needs different from those served by any of the above major programs.

All of these major programs are designed for one common purpose: to give the student a limited experience in specialization. Through his major, he will explore systematically a field of knowledge and gain a background sufficient for graduate study or further cultivation of a field by himself.

A student must designate his major before the beginning of his junior year by filing a formal Declaration of Major petition. Students are assigned a major ad-

* A course not on the List is accepted as Letters and Science credit if it is accepted in satisfaction of a general University requirement up to a maximum of 12 units, or if it is a major requirement.

** The 18 units may include not more than 9 units in courses numbered 300–499; not more than 6 units in Physical Education activity courses, a maximum of one unit a quarter.
viser by the department (or by the officials in charge of a group or field major). Students considering an individual major must confer with the dean and receive instructions for filing the petition and selecting an adviser.

A list of majors appears in the Announcement of the College of Letters and Science.

**Honors**

The Honor List  This is published each quarter, and lists all students who have completed at least one quarter of 12 units in the College of Letters and Science, with an average of 3.0 or better for all work undertaken in the University. Certain other students specially approved are also included. Students on the Honor List are designated “honor students.”

**Departmental Honors Programs** A description of the honors program in a major follows the description of the major program. A student on the Honor List may, upon approval of his adviser, enroll in the honors program in his major at any time up to the first term of his senior year. In special cases, a student not on the Honor List may also obtain approval of the adviser and the Dean to enroll in the honors program.

**Distinction with the Degree** Appropriate recognition is given to a student whose general scholarship is superior.

**Letters and Science List of Courses**

At least 162 units, including at least 54 units in upper division courses, offered for the degree of Bachelor of Arts must be in courses chosen from the Letters and Science List of Courses.

Courses not on the list, but taken for credit to satisfy a general University requirement established by the Board of Regents, will be accepted as equivalent to courses on the Letters and Science List up to a maximum of 12 units.

Any course not included on the Letters and Science List of Courses, but required, or accepted, as part of a major or as a prerequisite therefor, shall, for students offering that major at graduation, be treated as if it were on the Letters and Science List of Courses.

| Agricultural Economics: 23, 100A, 100B, 112A, 112B, 120, 175. |
| Anthropology: all undergraduate courses. |
| Art: all undergraduate courses. |
| Astronomy: all undergraduate courses. |
| Atmospheric and Space Sciences—all undergraduate courses. |
| Bacteriology and Immunology: all undergraduate courses. |
| Bibliography: IX. |
| Biochemistry: all undergraduate courses. |
| Biology: all undergraduate courses. |
| Botany: all undergraduate courses. |
| Business Administration: 100, 110, 111, 150, 154. |
| Chemistry: all undergraduate courses except 125. |
| Classic: all undergraduate courses. |
| Comparative Literature: all undergraduate courses. |
| Computer Science: all undergraduate courses. |
| Demography 100. |
| Design: all undergraduate courses. |
| Dramatic Art: all undergraduate courses; a total of not more than 12 units from courses 49 and 190 will be accepted as Letters and Science credit. |
| Economics: all undergraduate courses. |
| Education: 110, 192, 193, 194. |

English: all undergraduate courses.

English for Foreign Students, all undergraduate courses.

Entomology and Parasitology: 10, 104, 105, 130, 140, 150, 153.


Forestry and Conservation: 10, 115, 122, 123, 124, 125, 173, 175, 177.

French: all undergraduate courses.

Genetics: all undergraduate courses.

Geography: all undergraduate courses.

Geology and Geophysics: all undergraduate courses.

German: all undergraduate courses.

Greek: all undergraduate courses (see Classics).

History: all undergraduate courses.

Humanities: all undergraduate courses.

Interdepartmental Studies: 39, 45A, 45B, 45C, 104, 110, 114, 115, 170, 175, 180, 181, 186, 191A.

Italian: all undergraduate courses.

Journalism: all undergraduate courses.

Latin: all undergraduate courses (see Classics).

Linguistics: all undergraduate courses.

Mathematics: all undergraduate courses.

Medical Physics: all undergraduate courses.

Molecular Biology: all undergraduate courses.

Music: all undergraduate courses.

Natural Science: Contemporary Natural Science 1A, 1B, 1C.

Near Eastern Languages: all undergraduate courses.


Optometry (see Physiological Optics).

Oriental Languages: all undergraduate courses.

Paleontology: all undergraduate courses.

Philosophy: all undergraduate courses.


Physics: all undergraduate courses.

Physiological Optics: 101, 102, 132, 151, 160.

Physiology and Anatomy: all undergraduate courses.

Plant Nutrition: 115, 117 (see Soils and Plant Nutrition).

Political Science: all undergraduate courses.

Psychology: all undergraduate courses.


Sanskrit: all undergraduate courses (see Linguistics).

Scandinavian: all undergraduate courses.

Slavic Languages and Literatures: all undergraduate courses.

Social Science: All undergraduate courses.


Sociology: all undergraduate courses.

Soil Science: 100, 101, 110, 111, 112, 113, 114 (see Soils and Plant Nutrition).

Spanish and Portuguese: all undergraduate courses.

Speech: all undergraduate courses.

Statistics: all undergraduate courses.

Zoology: all undergraduate courses except 185A, 185B, 185C.

**SCHOOL OF BUSINESS ADMINISTRATION**

The School of Business Administration admits students at the junior level, and offers a curriculum leading to the undergraduate degree of Bachelor of Science in business administration. The primary function of the School is to prepare students for eventual responsible administrative and executive positions in business and government. Opportunities for specialization are provided for students preparing for such fields as accounting, business information systems, marketing, operations research, finance, managerial economics, and production management.
Admission

High school students looking forward to admission to the School of Business Administration should not emphasize vocational training in their preparatory work. In general, the standard high school courses in English, mathematics, history, civics, physics, chemistry, and foreign languages provide sound preparation for the School. It is advisable to include as much mathematics as possible.

Students entering the School from the College of Letters and Science (or its equivalent at another institution) must normally include the following subjects in their lower division program:

- English 1A–1B, Rhetoric 1A–1B, Comparative Literature 1A–1B or Dramatic Art 1A–1B
- One other course in English, Rhetoric, Comparative Literature or Dramatic Art
- Mathematics 1A or 11A or 16A
- Statistics 2, 16, or 20
- Equivalent of a quarter course 3 (or semester course 2) in one foreign language

Applicants from the University must present a grade-point average of 2.0 or better on all courses in the lower division. Others should see Chapter I of this catalogue for advanced standing admission requirements.

Students entering the School of Business Administration from other colleges, such as Engineering or Environmental Design, will follow a lower division course of study different from that outlined and should consult the Associate Dean of the School in 310 Barrows Hall for further information.

The following are additional breadth requirements only for students transferring from the College of Letters and Science:

- Additional language two courses. This is satisfied by (a) language or courses related to the language used for admission; (b) courses in mathematics or statistics beyond those required for admission; (c) a combination of the first two alternatives. Note that if a foreign language is offered, it must be a continuation of the one used to satisfy the admission requirement.
- Two courses of additional natural science.
- Three courses of additional social science, chosen from: agricultural economics, cultural anthropology, economics, economic geography, history, political science, psychology, and sociology.

General Requirements for the Degree

To obtain the degree of Bachelor of Science in Business Administration, a student must have completed 180 quarter units (including at least 60 units in upper division courses) with a C average or better, and with a minimum C average in all upper division Business Administration courses. Residence requirements must be fulfilled by all students as follows: the final 35 units must be taken on the Berkeley campus except in the case of senior transfers to the School of Business Administration who must complete their final 45 units on the Berkeley campus including a minimum of 35 units of upper division Business
Administration courses. All students must fulfill general University requirements (including Subject A and American History and Institutions, discussed in Chapter II).

The program in Business Administration is described in the course section of this catalogue. For detailed information about fields of emphasis, etc., please consult the Announcement of the School of Business Administration.

**Courses Stressing Quantitative Methods**

A number of courses are available in which the use of mathematical and statistical methods is stressed. A student interested in such courses should prepare himself by including in his lower division preparation Mathematics 1A–1B–1C and Statistics 20, or their equivalents. Additional mathematical preparation, including linear algebra, is highly recommended. Students should consult the Associate Dean of the School for further advice in planning a lower division program.

**Graduate Study**

The Graduate School of Business Administration, established in August, 1955, offers curricula leading to the Master of Business Administration degree and to the more specialized Master of Science degree. These curricula afford opportunity for advanced and specialized training based either upon the fundamental undergraduate curriculum in Business Administration or upon undergraduate study in other fields.

Students who wish to prepare for high-level research positions in business and government, or for academic careers at the university or college level, may pursue a program leading to the Ph.D. in business administration.

For detailed information, consult the Announcement of the Graduate School of Business Administration and Chapter III of this catalogue.

**Facilities and Opportunities**

**Library**  In addition to the unusually complete collection of trade journals, business periodicals and statistical publications located in the Main Library, students in Business Administration also have access to the Hans Kelsen Graduate Social Science Library in 30 Stephens Hall.

**Alumni Association**  Graduates of the School of Business Administration and the Graduate School of Business Administration continue an active interest in and support of the Schools, students, and fellow alumni through membership in the California Business Administration Alumni Association.

**Student Organizations**  Scholastic and professional fraternities, student chapters of the American Marketing Association, the Society for the Advancement of Management, and University clubs and societies offer many activities for the student in Business Administration to enrich his life, both on campus and in later years.

**Financial Aid**  In addition to general University scholarships (described in Chapter IV), certain financial aids are also available to students in the School of Business Administration. These include scholarships, grants-in-aid, and prizes.
These are normally awarded, without application, on the basis of scholastic merit. A limited number of loans is available through the School of Business Administration. Application may be made to the Associate Dean of the School, 310 Barrows Hall.

Graduate students in Business Administration are directed to the Office of the Graduate School of Business Administration, Room 350, Barrows Hall, for information about grants-in-aid, fellowships, assistantships, and readerships. In addition, loan funds in limited amounts are available through the Office of the Associate Dean of the Graduate School of Business Administration.

**SCHOOL OF CRIMINOLOGY**

The School of Criminology offers a broad range of studies in the nature, causes, and prevention of crime. The School's program falls into two main areas of emphasis: the first, general criminology, draws upon the concepts and methods of the social and behavioral sciences for an understanding of the economic, political, psychological, and sociological factors behind crime; the second, criminalistics, is concerned with the application of the natural sciences to law enforcement and crime investigation. The first program leads to a Bachelor of Arts degree; the second, to a Bachelor of Science degree.

**Admission**

Students are admitted in the junior year, after completion of a 90-unit lower division precriminology curriculum. This normally consists of the following subjects:

**Basic Program (All Students)**  English 1A–1B, or other reading and composition course; Modern Foreign Language—equivalent of 3 quarters; 2 quarter courses from Social Science 1A–1B, Sociology 1 or 10, another sociology course; Psychology 1 (or upper division psychology course in personality, social pathology or development).

**Social Science Emphasis (Criminology)**  Political Science 1 or 5, and 2; Psychology 3 (or upper division psychology course in personality, social pathology or development); either Statistics 2 (strongly recommended), 20, or Psychology 5; Natural Science, 18 units including one of the following: Physiology 1, Zoology 10, Genetics 10, Biology 1A–1B–1C, 11A–11B; humanities electives, 18 units.

**Natural Science Emphasis (Criminalistics)**  Chemistry 1A–1B–1C, 5, and 12A–12B; Physiology 1; Physics 6A–6B–6C; Mathematics 1A or 11A; Statistics 20; humanities electives, 5 units.

All of the above courses count toward the School's requirements for the bachelor's degree. The natural science and humanities electives should be chosen from those courses acceptable as breadth requirements in the College of Letters and Science—consult the ANNOUNCEMENT OF THE COLLEGE OF LETTERS AND SCIENCE for a list of these courses. (Students at other campuses or institutions should consult with their faculty advisers concerning appropriate course equivalents.) To be admitted to the School's upper division program, a student must present a grade-point average of 2.0 or better.
Program in Criminology

The student in criminology must complete a total of 180 quarter units (including the precriminology curriculum outlined above), with 40 units in basic criminology courses and eleven elective courses chosen from Criminology and other schools and departments. The student may take courses in the etiology of crime, in police and penal administration, in criminal law, in the prevention and control of juvenile delinquency, and in the criminalistics field. Specific course requirements and recommended electives are given in the Announcement of the School of Criminology.

Program in Criminalistics

The student in criminalistics must complete a total of 180 quarter units (including the precriminology curriculum), with 46 units in the criminalistics program, 9 units of required courses in other schools and departments, and 35 units of recommended electives chosen from Criminology and other schools and departments. He may take courses in criminal law, criminal investigation, scientific methodology, forensic medicine, biochemistry, microanalytical techniques, and several other topics. Specific course requirements are given in the Announcement of the School of Criminology.

Graduate Study

Programs are offered leading to the Master of Criminology and the Doctor of Criminology degrees. Candidates for higher degrees may be required to make up deficiencies in their undergraduate background after admission to graduate study in criminology. The completion of a special Core Seminar at the beginning of graduate study may partially substitute for some deficiencies.

The master’s degree program normally takes one year; the doctoral program normally takes three years. The graduate curricula are intended to give a broad range of preparation for teaching and research, and yet allow each student sufficient freedom to explore a field of specialization. The student works under the supervision of a graduate adviser who approves his program and guides his research. Specific requirements for higher degrees are presented in the Announcement of the School of Criminology.

Student Activities and Opportunities

The School of Criminology is characterized by an active concerned student body. A number of graduate and undergraduate students serve on the Student-Faculty Education Committee which concerns itself with such matters as curriculum, careers, student activities and administration. There is a chapter of Lambda Alpha Epsilon, a national law enforcement fraternity, at the School. There are organized graduate and undergraduate associations which sponsor events ranging from social gatherings to field trips and public lectures. Graduate students publish the scholarly journal, Issues in Criminology, which presents papers on important issues in the profession.

There are opportunities for financial aid, including the August Vollmer Memorial Scholarship Fund for undergraduates, the NIMH Intern Fellowships for
graduates, and the LEAA loan and grant program for both. For further information, consult the ANNOUNCEMENT OF THE SCHOOL OF CRIMINOLOGY.

SCHOOL OF EDUCATION

The School of Education is concerned with the training of qualified teachers and administrators. The School’s purpose is to implement high professional standards among those preparing to engage in educational service, and to encourage continuing speculation and research on the nature, role, methods, and problems of education in modern society. The School offers three principal areas of study: a teaching credential program, for those preparing for teaching positions in public schools; programs leading toward credentials for administrative, supervisory, and pupil personnel services in the public schools; and degree programs, both academic (M.A. and Ph.D.) and professional (Ed.D.), for those interested in teaching in college and university departments of education, or in carrying on research in the field of education.

Admission

An applicant to any program of the School of Education must be admitted to the Graduate Division. Those who plan to enter teacher education programs should confer with an adviser in the Credentials Office, 1615 Tolman Hall, early in their University careers, because the credential programs involve specific courses to be completed during the undergraduate years. Further details concerning requirements for admission are contained in the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION.

Degrees and Credentials

The following is a brief outline of the degrees and credentials for which the School of Education offers preparatory curricula.

Teaching Credential The holder of a State teaching credential is qualified for service in the public schools of California. A candidate for this credential must hold a bachelor’s degree, with a major and a minor in a teaching field (not education). The teacher education program at Berkeley normally comprises one postgraduate year following receipt of the bachelor’s degree, during which time the student takes basic courses in education, obtains actual teaching experience in a public school, and takes further courses in his major or minor field.

Other Credentials In addition to the teaching credentials, course work is offered in the School of Education for the following credentials: Administration; Pupil Personnel Services (pupil counseling, school psychometry and school psychology); and Supervision (miscellaneous services, pupil personnel services, school health services, and school libraries).

Higher Degrees Curricula are offered in the School of Education for the following degrees:

The M.A. program involves broad training in education, with specialization in selected areas.
The Ph.D. program requires original research leading to the contribution of significant ideas to the field of education.

The Ed.D. (Doctor of Education) degree is conferred in recognition of a candidate's command of a comprehensive body of academic and professional knowledge, and of his ability to organize and carry out investigation of significant problems in the field of education.

For further details of the requirements and areas of specialization for all credential and degree programs in education, consult the Announcement of the School of Education.

Facilities and Opportunities

The faculty of the School of Education is engaged in continuing research and service in many phases of education. Much of this activity is financed by grants from the federal government and private foundations. Opportunities are open to students in the School of Education for participation in research and service, and for financial assistance.

The facilities and opportunities in the School of Education include:

**Education Field Service Center**—offering service to public school systems and assistance in solving practical problems of education.

**Educational Media Laboratories**—containing facilities, equipment and materials pertinent to instruction and to research in education.

**Financial assistance**—a limited number of opportunities are available through the School of Education including special scholarships for teaching credential candidates; teaching fellowships and assistantships; research and service assistantships; teaching and administrative internships.

**University Extension** University Extension offers a broad and varied program of courses on campus and in communities throughout California. Some extension courses may, on approval, be applied toward the bachelor's degree and certain credentials. Through University Extension, the School of Education offers a graduate internship program for preparation of secondary school teachers. University Extension frequently co-sponsors special conferences on educational problems.

**SCHOOL OF FORESTRY AND CONSERVATION**

The School of Forestry and Conservation offers undergraduate and graduate programs designed to prepare students for general forestry, wood science and technology, and other phases of the conservation of the resources of wildlands. Since 1914, when the first forestry curriculum was offered on the Berkeley campus, more than 1,700 students have been graduated from the School. They have exercised strong leadership in the management of public and private forests and other wildlands in California and throughout the nation. The undergraduate major in general forestry is the only professional forestry program offered in the state which is accredited by the Society of American Foresters; the School also offers the only programs in the state leading to the graduate professional de-
gree, Master of Forestry. Similarly the graduate programs leading to the Ph.D. in forestry or in wood science and technology are unique in the state.

The programs of the School in general forestry are oriented to the management of the resources of forested and wildlands. They provide opportunity for concentration in such fields as timber management, range management, wildlife habitat management, or recreational land management, as well as for specialization in particular disciplines such as forest ecology, forest economics, forest soils, or forest genetics. The programs in wood science and technology are oriented to an understanding of wood and enable specialization in wood mechanics, wood physics, wood chemistry, wood anatomy, or wood processing.

Undergraduate Programs

Admission Students are admitted to the School of Forestry and Conservation following completion of the sophomore year. The preparatory program of the freshman and sophomore years may be completed either at Berkeley or at any other accredited collegiate institution. At Berkeley the preparatory program is offered through the College of Agricultural Sciences.

Applicants for the undergraduate curriculum must meet general University requirements for admission as described in Chapter I. The prospective forestry student should include in his high school program the following subjects: algebra (2 units), plane geometry (1 unit), trigonometry (½ unit), mechanical drawing (½ unit). Two units of laboratory science (preferably chemistry and physics) are strongly recommended.

The undergraduate curriculum includes two majors, one in general forestry and the other in wood science and technology. Students seeking admission to the upper division curriculum must satisfy the following conditions: (1) admission to the University; (2) completion of at least 84 quarter units of acceptable courses; (3) a grade-point average of 2.0 or better for all college courses undertaken; (4) satisfaction of the subject matter requirements for the desired major as outlined below. Students satisfying all conditions for admission except for a limited number of subject matter requirements should consult the School as to their eligibility.

Major in General Forestry The preparatory program as offered through the College of Agricultural Sciences at Berkeley includes the following courses (units in parentheses) in satisfaction of the subject matter requirements for this major:

- Biology 1A–1B–1C (15)
- Chemistry 1A–1B (8)
- Economics 1 and 3 (9)
- Civil Engineering 21 (4)
- Speech 1A–1B (10) or Comp. Lit. 1A–1B (8)
- English 1A–1B (10) or Geology 10 (4)
- Mathematics 16A–16B (8) or Statistics 20 (4)
- Physics 6A–6B (8) or Electives (20 or 22)

Programs taken at other collegiate institutions should approximate these courses as closely as possible. Information as to the specific minimum requirements for this major is available in the ANNOUNCEMENT OF THE SCHOOL OF FORESTRY AND CONSERVATION.

The summer field program is prerequisite to the balance of the upper division courses in the general forestry major and should be completed during the sum-
The upper division program following completion of the summer field program is distributed as follows: upper division botany and soil science (8 units); required courses in forestry (34 units); technical option (38 units); nontechnical electives (16 units).

The technical option permits the student to develop a field of concentration within or related to forestry, such as the management of wild lands, range management, wildlife management, recreational land management, or preparation for specialization at the graduate level. The nontechnical electives provide an opportunity for breadth in education.

Before being granted the Bachelor of Science degree, the student majoring in general forestry must satisfy the following conditions: (1) completion of general University requirements (see page 31); (2) completion of at least 201 units of University work (including not more than 6 of these units in lower division physical education courses); (3) satisfaction of the subject matter requirements of the major; (4) at least a 2.0 grade-point average in all courses undertaken while in the School.

Major in Wood Science and Technology

The preparatory program as offered through the College of Agricultural Sciences at Berkeley includes the following courses (units in parentheses) in satisfaction of the subject matter requirements for this major:

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<th>Course</th>
<th>Units</th>
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<td>Botany 10</td>
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<tr>
<td>Chemistry 1A–1B–1C</td>
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<tr>
<td>Chemistry 12A–12B</td>
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<td>Mathematics 1A–1B–1C</td>
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<td>Mathematics 11C–12A–12B</td>
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<tr>
<td>Physics 4A–4B–4C–4D–4E</td>
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<tr>
<td>Humanities and Social Science</td>
<td>(15)</td>
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<tr>
<td>Electives</td>
<td>(6)</td>
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Programs taken at other collegiate institutions should approximate these courses as closely as possible. Information as to the specific minimum requirements for this major is available in the Announcement of the School of Forestry and Conservation.

The upper division program is distributed as follows: required courses in forestry (27 units); other required courses (19 or 20 units); technical electives (17 or 18 units); nontechnical electives (26 units).

The technical electives permit the student to develop a field of concentration in an area relevant to wood science and technology. The nontechnical electives provide for breadth in education.

Before being granted the Bachelor of Science degree, the student majoring in wood science and technology must satisfy the following conditions: (1) completion of general University requirements (see page 31); (2) completion of at least 180 units of University work, including at least 54 units in upper division courses and not more than 6 units in lower division physical education courses; (3) satisfaction of the subject matter requirements of the major; (4) at least a 2.0 grade-point average of all courses undertaken while in the School.
Graduate Programs

Various graduate programs in forestry, in range management, and in wood science and technology are available through the School of Forestry and Conservation. Students may be admitted to these programs on the basis of scholastic promise and undergraduate preparation either in forestry or in various related fields of study. These programs are summarized below. For full details, please see the ANNOUNCEMENT OF THE SCHOOL OF FORESTRY AND CONSERVATION or consult the Graduate Adviser, 145 Mulford Hall.

Master of Forestry Program  The M.F. degree is a professional degree representing completion of advanced academic preparation for a career in the practice of forestry. The program involves at least a year of study and is designed to broaden a student's grasp of forestry principles and to increase his ability to apply the principles to selected professional problems. The core of the program consists of analysis and evaluation of a number of case studies. Requirements for the degree include residence in the School for at least three quarters; maintenance of a 3.0 grade-point average in at least 36 units of prescribed course work; preparation of a satisfactory professional paper; and passage of an oral comprehensive examination.

Master of Science Programs  The M.S. in forestry provides a program for qualified students interested in a specialized aspect of forestry in terms either of research or administrative duties within this specialization. Specialization is possible in fields such as tree physiology, forest soils, silviculture, photogrammetry, mensuration, or forest economics. The M.S. in range management, which is administered by an interdepartmental group, provides for specialization in the scientific basis of range management and in the ecology of wildland areas. The M.S. in wood science and technology, also administered by an interdepartmental group, provides for graduate specialization in wood mechanics, wood physics, wood chemistry, wood anatomy, or wood processing.

Doctor of Philosophy Programs  Programs leading to the Ph.D. degree are available as follows: (1) in forestry; (2) in forestry-related sciences such as agricultural economics, botany, entomology, genetics, plant pathology, plant physiology, soils, and zoology; (3) in wood science and technology; and (4) in sciences related to range management. The faculty is highly active in research and has developed facilities which enable doctoral candidates to attack a wide variety of problems.

Facilities and Activities

Teaching Facilities  Mulford Hall contains workrooms for dendrology and wood technology; laboratories; statistical and drafting workrooms; extensive herbarium and wood collections; and a forestry library. The Berkeley campus contains specialized forestry facilities such as greenhouses, nursery areas, and the 160-acre Strawberry Canyon.

Forest Land  The UC Forestry Camp, located near Quincy in the Sierra Nevada, is the site of the ten-week summer field program. The 2,860-acre Blodgett Forest, located in El Dorado County, is a well-stocked young-growth
forest of pine and fir; it is the site of active research by faculty and graduate students. Other smaller properties are also administered by the School.

**Forest Products Laboratory** Located at the Richmond Field Station, this unit conducts organized research in wood chemistry, pulp and paper, wood physics, and related applications of wood science and technology. Its extensive modern facilities allow investigation of a wide range of problems and topics.

**Sagehen Creek Wildlife and Fisheries Station** This station, located at an elevation of 6,500 feet, 12 miles north of Truckee, California, was developed for year-round basic field research in ecology by faculty members and graduate students. The main problems under study are concerned with cycles in game animals, birds, and fishes, with special effort being directed toward the study of the causes of winter mortality in fishes. The facilities are available for other ecologic studies as well.

**Wildland Research Center** A part of the Agricultural Experiment Station, this unit enables the School of Forestry and Conservation to participate with other departments in research in forestry, watershed protection, wildlife management, range management, recreation, and other aspects of wildland resource use.

**Student Organizations** The Forestry Club, established on the Berkeley campus in 1912, is the focus of student activities in the School. The Club meets at monthly intervals for technical programs, and conducts organized social, athletic, and other extracurricular activities. Members of the Club edit and publish the student annual, *Timber*.

Theta Chapter of Xi Sigma Pi, the national honorary forestry fraternity, is located at the School. This group provides counseling services for students, sponsors discussions on topics of current interest, and promotes student academic achievement.

**Financial Aids**

Students interested in financial aids are referred to the information for undergraduates and graduates on pages 61 and 62. A limited number of financial aids are available only to forestry students. For details, graduates should consult the Committee on Fellowships and Graduate Scholarships; undergraduates should consult the Committee on Undergraduate Scholarships.

The Walter Mulford Loan Fund is available to students in forestry, especially those in need of assistance in connection with the Summer Field Program. Information concerning this Loan Fund may be obtained from the Dean, School of Forestry and Conservation, 145 Mulford Hall.

**SCHOOL OF JOURNALISM**

The Graduate School of Journalism offers a one-year program leading to the degree of Master of Journalism (M.J.). The program seeks to achieve (a) the blending of the arts and skills of journalism with study of the other academic disciplines that are the substance of journalism; (b) the study of standards and principles of professional responsibility that separate professional education
from vocational training; and (c) the opportunity for focus on a substantive area of concentration.

The School emphasizes an interdisciplinary approach to the professional study of journalism, and students normally are encouraged to select a particular area of knowledge and become well grounded in it as preparation for later professional specialization.

**Undergraduate Program**

An individual major in journalistic studies is available to qualified students (see Major Requirements *Announcement of the College of Letters and Science*), upon petition to the Dean of the College of Letters and Science, following consultation with the departmental adviser. For further details of this program, see page 85 of this catalogue.

**Admission**

An applicant for graduate study should hold a Bachelor of Arts or Sciences degree comparable to that given by the University of California and must be admitted to the Graduate Division. Requirements and procedures are outlined in the circular *Admission to Graduate Study*, available from the office of the Dean of the Graduate Division.

**Graduate Program**

The School makes no requirement that the candidate for graduate study have had previous training in journalism. However, such students normally will require more than three quarters to complete the degree. Those candidates who have had undergraduate work in journalism or professional experience will follow a somewhat different program of instruction within the School.

The student entering graduate study is expected to have a special purpose and his program will be arranged accordingly. Special interest programs in such fields as public opinion research, government information activities and general press relations, can be individually arranged. In addition to serving the interest of the recently graduated student seeking a professional career, the School also attempts to serve the needs of the professional journalist who desires to return to the university environment for further study. The School also offers a graduate curriculum designed to lead to a teaching career in journalism at the junior college or four-year college level.

Graduate students will qualify for one of two plans:

**Plan A**: For students who have not completed an undergraduate major in journalism or an acceptable equivalent, but who expect to follow careers in professional journalism.

**Plan B**: For students who have completed an undergraduate major in journalism or its acceptable equivalent, or who present significant journalism experience.

A Core Course (Journalism 200A–B–C) is intended to provide the graduate student with a grounding in the theory and practice of the news function by means of lectures, laboratory experience and discussions, and through progressively more demanding communications projects.
The Core Course is required of all students proceeding under Plan A. Six half-quarter seminars (1 unit each), dealing with various areas of mass communication study, are held in conjunction with the Core Course, two in each quarter. These 1-unit courses can be taken by students with an interest in an introduction to the various fields of mass communication study, either as a matter of general interest or to provide background on which to proceed to further study and research. Only that portion of the Core Course designated as Journalism 200C is required of students proceeding under Plan B. A major portion of the student's time is given to a communications project based on his own special subject-matter field of interest, and drawing from courses he has taken and is taking in disciplines other than journalism itself.

Within its basic pattern, the Core Course is flexible enough to permit, also, such projects as a photo-essay on urban poverty, for instance, or a television documentary in a science research area.

Requirements for the Degree

The M.J. degree requires that a student be in residence at least three quarters and complete course requirements with at least a B average. The required course work consists either of (a) 30 units of graduate or upper division work (at least 12 of which must be at the graduate level in journalism) and completion of a thesis; or (b) 36 units of graduate and upper division courses (of which at least 18 must be graduate courses in journalism), followed by comprehensive oral and written examinations.

Facilities

The School of Journalism is housed on one floor of Sproul Hall, with its main office at 318 Sproul Hall. Facilities include a library and reading room, stocked with more than thirty magazines and trade publications, some twenty daily newspapers, and several hundred current books relating to the mass media. These supplement materials available in the newspaper room and the stacks of the main library. In Sproul Hall also are typing and editing laboratory rooms, seminar rooms, a commons room, and darkroom facilities for photojournalism. Large classes of general interest are scheduled in other campus buildings. In addition to the School's tape recorders for broadcast journalism, campus television production facilities are available for special TV projects.

SCHOOL OF LAW

The School of Law on the Berkeley campus of the University of California had its inception in 1882 when an instructor in Latin at the University offered a course in Roman Law. The number of courses grew and, by 1903, professional degrees were granted. Then, in 1912, The Regents established a separate School of Law (The School of Jurisprudence, 1912–1950) in its own building on campus. The building was financed principally through contributions in honor of Judge John H. Boalt and "Boalt Hall" became the popular name not only for the building but for the school itself. In 1951, the School moved into the present building. Today, Boalt Hall has a broad three-year curriculum leading to the
J.D. degree and a postgraduate program for students working toward the LL.M. and J.S.D. degrees.

The aim of the School is not only to prepare students to practice law, but also to develop the scientific study of law and to further legal research. The School is a member of the Association of American Law Schools and is approved by the American Bar Association; its graduates are qualified to become applicants for admission to practice in any state of the United States.

Preparation for the Study of Law

Experience has shown that students from diverse educational backgrounds do equally well in law school and later in practice. As a result, there is no single “pre-law” major required or even recommended. However, for those students still in a position to structure their curriculum the following are suggested: (1) Learn to write. Take courses in which your work will be vigorously edited. (2) Enroll in courses demanding analytical skills. (3) Obtain some breadth in humanities and social sciences. A good lawyer must understand the social context within which legal problems arise. (4) Acquire a general understanding of the business world. A significant portion of legal problems are related to the business community. In selecting specific courses to fulfill these recommendations, consult your undergraduate adviser. The ability to use a typewriter is also useful to a lawyer or law student.

It should be emphasized, however, that a student should not be deterred from pursuing the study of law merely because his undergraduate education has not been focused on the areas suggested above. The law school selects its students from a wide variety of backgrounds and training. This diversity itself enhances and enriches the legal experience of all the students.

The Law Curricula

Professional Curriculum The professional curriculum of the School of Law leads to the degree of Juris Doctor (J.D.). It is designed for full-time students only and requires six semesters for completion. The School of Law does not offer a part-time or evening program. New students are admitted only at the beginning of the fall semester.

The work of the first year is prescribed; the work of the second year is in part prescribed and in part elective. During the third year all courses are elective. Courses in the curriculum are listed elsewhere in this catalogue.

Graduate Curriculum The student who desires (1) to broaden his professional education by study of legal history, international and comparative jurisprudence, or the relations of law and other social sciences, or (2) to supplement his professional education by study of special subjects (e.g., taxation, labor law, international law, marital property, procedure, corporations), or (3) special training in preparation for law teaching, legal research, government service, or legislative drafting, may apply to become a candidate for the degree of Master of Laws (LL.M.) or the degree of Doctor of the Science of Law (J.S.D.).
Admission Requirements

Admission to the Professional Curriculum  Applicants for admission to the professional curriculum of the School of Law must have received a bachelor's degree or an equivalent degree from a college or university of approved standing.

Applicants will be considered primarily on the basis of their potential ability to complete satisfactorily the course of study required for graduation from Boalt Hall, as measured by their undergraduate average and scores on the Law School Admission Test.

In appraising a student's undergraduate average, his average in the work of the last two prelegal years will generally be considered more heavily than that of his earlier college work. Usually, a grade B (3.0) average is a minimum prerequisite for admission to the law school.

Account may also be taken of a student's potential for public leadership or for exceptional accomplishments. Some applicants may be asked to come to the School for personal interviews before admission is granted.

The Law School Admission Test, administered by the Educational Testing Service, is required of all applicants for admission to this School. Applicants should write to Law School Admission Test, Educational Testing Service, Princeton, New Jersey 08540, requesting an application blank and bulletin of information listing places where the test may be taken and the dates on which the test will be given. At the applicant's request, his score will be reported not only to this law school, but also to other law schools where he may be applying for admission. He will also receive an individual score report directly from the Educational Testing Service.

Applications for admission to the School of Law for the fall term, 1969, must be filed by May 1.

Admission to Advanced Standing  Applicants who have completed at least one year of work in another law school may be admitted to the second year of the professional curriculum with credit for not more than one year of such work if (1) before undertaking the study of law the applicant had received a bachelor's degree, or an equivalent degree from a college or university of approved standing, (2) the work has been completed in a full-time day program of study at a school which is a member of the Association of American Law Schools, and (3) the work for which credit is sought has been of superior quality. The faculty reserves the privilege of prescribing further conditions for the granting of such credit and may, at its discretion, require examinations in subjects for which credit is sought. To be assured of satisfactory programs, students transferring from other law schools should plan to enter at the opening of the fall term.

Students who have been disqualified at another law school will not be admitted to this School.

Admission to the Graduate Curriculum  Admission to the graduate curriculum, as a candidate for either the LL.M. or the J.S.D. degree, may be granted to any applicant who holds a professional degree from an approved law school and who, in the opinion of the faculty, gives satisfactory evidence of capacity to
complete the requirements for the degree; except that an applicant who has not received the A.B., B.S., or equivalent degree may be admitted only if the faculty concludes that his preparation in social sciences other than law has not been unreasonably limited. An applicant’s capacity to complete the degree requirements generally must be evidenced by an academic record of distinguished past performance, although in appropriate cases admission as a degree candidate may be granted, in the discretion of the faculty, if there is other sufficient indication of such capacity.

At the discretion of the faculty, admission to the graduate curriculum, though not as a candidate for a degree may also be granted in an appropriate case to an applicant who holds a professional degree from an approved law school and who, in the opinion of the faculty, gives evidence of capacity to continue advanced legal study successfully. An applicant so admitted may, after completion of one academic year of resident study, depending on his achievement and proved ability, be admitted as a candidate for the LL.M. or J.S.D. degree.

If the previous training of an applicant for admission to the graduate curriculum has been received in foreign educational institutions, he must present satisfactory evidence that his preparation and his capacity to undertake graduate study in this country are substantially equivalent to the requirements for graduates of an American college or university.

Law Building Complex

From 1911 until 1951 the School occupied Boalt Hall of Law, built as a memorial to Judge John H. Boalt with funds provided by his wife, Elizabeth Josselyn Boalt, supplemented by gifts from California lawyers. In 1951, the School’s activities, as well as the name “Boalt Hall,” were transferred to the present building. The new quarters accommodate a greatly increased student body through enlarged classrooms, library reading room, and other facilities requisite to a modern law school. Special provision also has been made for student study carrels, typing areas, Law Review quarters, and lounges. In addition, a courtroom, the Luke Kavanagh Room, has been made possible through the estate of the late Luke Kavanagh, for many years a San Francisco court reporter.

The law complex was enlarged in 1967. The addition includes the Earl Warren Legal Center with an auditorium, research and conference rooms, a high-rise dormitory and dining room for law students, and additional classroom, library and office space. Funds for the Center and dormitory were contributed by Boalt Hall alumni, foundations, The Regents of the University of California and friends of the School to provide facilities for research projects, institutes and conferences.

The Law Library

The Garret W. McEnemey Law Library is named after the late Regent McEnemey of San Francisco, from whose estate a substantial portion of the building funds were derived. The library contains one of the largest collections of legal
materials in the country, housing at present over 235,000 volumes. It provides not only the materials required by the students for professional studies, but also the resources required by faculty and members of the bench and bar for legal research.

The library contains substantially complete collections of Anglo-American case and statute law. Extensive holdings of American and English legal periodicals are available, including all law reviews published in the United States. The international legal library at Boalt includes more than 40,000 foreign monographs and an outstanding collection of foreign periodicals. An extensive set of United Nations documents, international treaties and Common Market materials is also available. Working collections in the law of several important foreign countries are sufficiently developed so that effective comparative studies may be made. The law library maintains significant collections in the field of Canon Law and Mining Law.

The School of Law is an official depository for important legal records and documents. Chief Justice Earl Warren, one of the School's most distinguished alumni, designated the law library as a depository for U. S. Supreme Court records and briefs and, in addition, presented a gift of all briefs filed with the Court since 1936. The late Justice Harold H. Burton donated his bound set of the Congressional Record. In 1962 the library became a depository for California legal documents. In 1963 the Honorable Jeffrey Cohelan, Member of Congress, designated the library as an official depository of United States legal documents. All available briefs of California appellate courts are deposited in the library. In 1964 the Herbert Goodrich Library was established at the law library as a depository for Uniform Commercial Code publications.

In addition to general University appropriations the law library draws support from the following endowments: the Jane K. Sather Law Library Fund, the Louis E. Goodman Law Library Fund, the Garret W. McEnerney Memorial Fund, the Lloyd M. Robbins Fund, the Sidney M. Ehrman Law Library Fund and the William E. Colby Law Fund.

There is also valuable material for the study of law and legal institutions in the University Library, in the libraries of the Bureau of International Relations, the Institute of Governmental Studies, the Institute of Industrial Relations, and in the Bancroft Library.

The Earl Warren Legal Center

The opening of the Earl Warren Legal Center in 1967 has brought to fruition the vision and years of effort of Boalt Hall faculty and alumni. Its purpose is to improve the understanding of our laws, their interpretation and administration, and their role in society by a continuing program of conferences and research. Participation in these activities by a world-wide community of scholars, lawyers, judges, social scientists, and others will facilitate an interchange of ideas from a variety of disciplines.

Constructed as an integral part of the Law Complex, the Legal Center provides facilities, including an auditorium, meeting rooms and research offices, which has enabled the School of Law to enlarge its research activities and its program of conferences and institutes. Examples of these programs in recent
years include institutes for Prosecuting Attorneys and for Juvenile Court Judges and Referees, and conferences on Labor Relations and Arbitration and on Law and the Entertainment Industry. The Center has brought together numerous research activities which were under way, such as the Penal Code Revision and Social Problems Unit projects. The presence of the Center in the School of Law is of mutual benefit for each of these activities and for the School's educational program.

SCHOOL OF LIBRARIANSHIP

The School of Librarianship offers a one-year basic curriculum at the graduate level leading to the Master of Library Science degree, which qualifies the holder for service in various types of libraries and other information agencies. The School also offers two advanced degree programs—the Doctor of Library Science and the Ph.D.—which prepare a student for advanced research in theories and problems of librarianship and the information sciences, as well as for administrative, planning, and teaching positions.

Admission

An applicant to the basic curriculum must hold a Bachelor of Arts or Science degree comparable to that given by the University of California. He must qualify for admission to the Graduate Division of the University, without deficiencies. In addition, he must submit scores from the Graduate Record Examination Aptitude Test and evidence of college-level study in foreign languages in one of the following combinations: (1) two or more years of one modern foreign language; (2) one year of one modern foreign language and one or more years of another foreign language, ancient or modern.

Note that two applications for admission are required; one for the School of Librarianship and the other for the Graduate Division, Berkeley, including an application fee of $10 and complete transcripts of record. Deadlines for applying to the Graduate Division are announced in the circular ADMISSION TO GRADUATE STUDY. Application blanks are available from the Office of the Dean of the School of Librarianship. The School urges its applicants to apply as early as possible (undergraduates should apply upon completion of the first quarter of their senior year).

Courses in the School of Librarianship's basic curriculum are open to graduate students of other departments who are, in the instructor's judgment, qualified to undertake the work.

The Basic Curriculum: Master of Library Science Degree

Forty-two (42) quarter units are required for the Master of Library Science degree. This involves four quarters of study, in which the student is given a broad introduction to: forms of publication; reference; bibliographical organization; cataloging and classification; and the organization and administration of libraries (with a choice of specializations). The courses dealing with these topics are described under the School of Librarianship in the course section of this catalogue. The student will also have an opportunity to include elective courses in librarianship and in other departments.
The student must maintain a minimum average of B (3.0). He may count toward the degree only those courses for which he receives a grade of A, B, or C. A student may, in exceptional cases and with the approval of the School, include in his program courses in librarianship taken at another accredited institution, to a maximum of four semester units or six quarter units.

For further details concerning the curriculum, please consult the Announcement of the School of Librarianship.

**Advanced Degree Programs**

These programs are open to applicants who satisfy the admission requirements, including graduation with a minimum B average from the basic curriculum in a graduate library school accredited by the American Library Association or approved by the University of California. In special cases applications will be considered from those with equivalent backgrounds in library-related fields.

**Doctor of Library Science** This is a professional degree conferred in recognition of a candidate's command of a comprehensive body of professional knowledge and of his ability to organize and carry out investigations of significant problems in librarianship.

A student is advanced to candidacy once he has satisfied several conditions: (1) residence in the School for three quarters; (2) passing an intensive written and oral examination administered by the School, covering material in the field of his dissertation; (3) securing approval of his complete program, including the proposal for his dissertation; (4) passing, if the faculty so requires, a qualifying examination in one or more foreign languages relevant to his dissertation.

In order to obtain the degree, the candidate must complete three quarters in addition to the three required for candidacy. His program of study will be supervised by a five-man committee appointed by the Graduate Council of the Berkeley Division. This committee will consist of three or four members from the School of Librarianship, and the remainder from departments related to the program of study. The program must include 54 units of graduate and upper division courses relevant to the candidate's field of study (not including a thesis course, or courses in the basic curriculum described earlier). Finally, he must submit and defend his dissertation in an oral examination.

For further information, please consult the Announcement of the School of Librarianship.

**Doctor of Philosophy** The degree of Doctor of Philosophy is conferred upon the qualified candidate in recognition of his command of a comprehensive body of knowledge and upon his demonstration of a general grasp of the subject matter of a large field of study. He must also show his critical ability and power to analyze problems, as well as to coordinate and correlate data from a number of cognate disciplines. The student must, furthermore, show through his dissertation the power to make an original contribution to his chosen field of study and, throughout all his career as a graduate student, give evidence of his ability to work independently.

The general procedures and requirements for the Ph.D. are outlined in Chapter III of this catalogue. The qualifying examination will include the field
of the candidate's dissertation (with closely related subjects outside of the School of Librarianship) and also one other field of librarianship, and finally an oral examination of the candidate's comprehensive grasp of a wide range of knowledge relevant to the defense of his dissertation. For further information, please consult the Announcement of the School of Librarianship.

**SCHOOL OF OPTOMETRY**

Optometry is the art and science of vision care, drawing upon the principles of anatomy, optics, physiology, and psychology, and includes the study of both environmental and personal factors influencing visual performance. The School of Optometry seeks to provide training for the professional practice of optometry with high standards of competence. The School seeks as well to provide its students with an awareness of the social and intellectual environment in which they will practice their profession.

**Admission**

Students are admitted to the School of Optometry in the junior year (i.e., after 90 quarter units or 60 semester units of undergraduate preparation). A student is advised to include in the high school curriculum the following subjects: algebra, geometry, trigonometry, chemistry, physics, English, mechanical drawing, and two or three years of one foreign language.

The following college-level preparation is required (acceptable courses at the University of California, Berkeley, are given in parentheses):

- Analytical Geometry (Mathematics 16A–16B or Mathematics 190A–190B)
- General Chemistry (Chemistry 1A–1B)
- Organic Chemistry (Chemistry 8A–8B)
- English (English 1A–1B or Speech 1A–1B)
- Biology (Biology 1A–1B–1C)
- Physics with Laboratory (Physics 2A–2B–2C or Physics 6A–6B–6C)
- Psychology (Psychology 1)

A minimum grade-point average of 2.25 is required. Minor subject deficiencies are permitted, if made up in the first year of enrollment in the School of Optometry. Students making up such deficiencies are enrolled in special status until the requirements are completed. Students must also satisfy the general University requirements for admission, given in Chapter I. For further details, see the Announcement of the School of Optometry, available from the School upon request.

**Program in Optometry**

This program takes four years: the first year is devoted to more advanced study of the basic sciences which form the background for optometry; the second and third years are devoted to the science of optometry and the acquisition of the technical skills; the fourth year is devoted to the practice of optometry and the detailed study of specialized areas.

After successful completion of the fourth year, a student will receive the degree of Doctor of Optometry, which qualifies him to take the state board examinations in most of the United States.

* 2.4 for students who were ineligible for admission to the University in freshman standing, 2.8 for all out-of-state applicants.
Program in Physiological Optics

The graduate program in physiological optics leads to the Master of Science degree and the Doctor of Philosophy degree. Offered in cooperation with other departments of the University, this program is designed to prepare students for a career in teaching and research in the sciences of vision. For admission and degree requirements and other details, consult the ANNOUNCEMENT OF THE SCHOOL OF OPTOMETRY and Chapter III of this catalogue.

GRADUATE SCHOOL OF PUBLIC AFFAIRS

Since 1962 the degree of Master of Arts in public administration has been offered by the Department of Political Science. In December, 1967, the Board of Regents approved the establishment of a Graduate School of Public Affairs for career public administrators and others concerned with research and teaching in public affairs. While the transition to the program of the Graduate School of Public Affairs is being effected courses and seminars in the Political Science Department and other University departments and schools are being used by students completing the MAPA Program. Provisional planning has been completed and the School is expected to begin its program during the academic year of 1969–1970. It will have three main areas of teaching and research: public administration and public policy; international and comparative administration; and regional, metropolitan and urban affairs. It will award the degree of Master of Public Affairs, replacing the present Master of Arts in public administration. Further information concerning the programs of the new School will be published in a separate bulletin. Address letter of inquiry to the Graduate School of Public Affairs, 118 Moses Hall, University of California, Berkeley 94720. Applicants are currently accepted for enrollment in the fall quarter.

SCHOOL OF PUBLIC HEALTH

The objective of the School of Public Health is to provide the student knowledge in the basic public health disciplines of biostatistics, community organization, epidemiology and environmental hygiene and an opportunity to develop proficiency in those technical and organizational skills which are required for specialized work within the field of public health. The broad scope of this objective requires that the School present a faculty qualified in a diversity of fields. In addition, it calls upon the faculties of other departments and upon persons who are involved in the problems of public health practice outside the University. Courses may be drawn from many departments of the University and arranged so that the special needs of each student are best served.

Admission

Formal application for admission to the Graduate School of Public Health should be made not later than May 15. Those seeking traineeships should apply not later than April 1. Students are encouraged and in most programs required to enter for the fall quarter because of the order in which courses are scheduled. Enrollments are limited by the physical capacity of the School and frequently a considerable time is required to process graduate applications. Usually appli-
Applications are acted upon in the order in which they are received. Applicants should plan to apply well in advance even though there may be doubt as to whether they will be able to enroll, for there may be delays in awarding traineeships or fellowships. Should an applicant find his plans have changed so that he cannot enroll, he should notify the School of Public Health as soon as possible in order that an alternate may be admitted.

Graduate Curricula

Graduate curricula in the School of Public Health lead either to professional or to academic degrees. The professional degrees, Master of Public Health and Doctor of Public Health, constitute preparation for positions of administrative leadership in official and voluntary health agencies. The academic degrees prepare the candidate for research and teaching in specific fields in the health sciences. The requirements for admission to these programs are described in the Announcement of the School of Public Health.

Master of Public Health The program leading to the Master of Public Health degree places emphasis on public health activities in general. However, because of the diversified nature of public health work, several areas of specialization are provided including the following:

- Behavioral Science
- Biostatistics
- Comprehensive Health Planning
- Environmental Health
- Epidemiology
- Hospital Administration
- Maternal and Child Health
- Medical Care Administration
- Medical Microbiology
- Nursing Administration
- Occupational Health
- Public Health Administration
- Public Health Education
- Public Health Engineering
- Public Health Nutrition
- Public Health Social Work
- Radiological Health

Within these curricula, certain technical fields such as dental health, family planning, and mental health may be given further attention.

In addition to the academic requirements described in the Announcement of the School of Public Health, candidates for the Master of Public Health degree must complete a period of approved field experience unless their previous experience renders this requirement unnecessary. Although students who are fully prepared may obtain this degree after one year of study, programs extending beyond a single academic year are not unusual. In certain cases, one or more quarters of preparatory work, as determined by the Admissions Committee of the School, are recommended before a student enters this curriculum.

Doctor of Public Health This degree is conferred in recognition of the candidate’s command of a comprehensive body of technical knowledge in the field of public health and its related disciplines, and his ability to initiate, organize, and pursue the investigation of significant problems in public health. Admission is based upon prior completion, with an outstanding scholastic record, of an academic program equivalent to that required for the Master of Public Health degree at the University of California, capacity for leadership in the field of specialization, and intellectual capacity to pursue independent work.
Master of Arts  The degree of Master of Arts in biostatistics is offered under the direction of the Group in Biostatistics composed of members of the faculties of the Division of Biostatistics of the School of Public Health and the Department of Statistics. A program in demography leading to the degree of Master of Arts is offered under the direction of the Group in Demography composed of members of the faculties of the School of Public Health, the Department of Economics, the Department of Sociology, and the Department of Demography.

Master of Science  Curricula leading to the Master of Science degree in environmental health sciences are offered in the fields of industrial hygiene, air resources, radiological sciences, or environmental biology.

Doctor of Philosophy  The degree of Doctor of Philosophy may be taken in biostatistics, demography, environmental health sciences, comparative pathology, epidemiology, immunology, or microbiology. The program in biostatistics is under the direction of the Group in Biostatistics composed of members of the faculties of the Division of Biostatistics of the School of Public Health and the Department of Statistics. The program in demography is under the direction of the Group in Demography composed of the members of the faculties of the School of Public Health, the Department of Economics, the Department of Sociology, and the Department of Demography. The program in comparative pathology is under the direction of the Group in Comparative Pathology; the program in immunology is under the direction of the Group in Immunology; the program in microbiology is under the direction of the Group in Microbiology, composed of the members of the faculty of the School of Public Health and various other departments on the Berkeley, San Francisco, and Davis campuses.

Special Financial Aid for Training in Public Health  A number of traineeships and grants-in-aid are available for education in specific areas of public health. For further information, see the ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH, or write to the Dean of the School of Public Health, University of California, Berkeley, California 94720.

[ ] SCHOOL OF SOCIAL WELFARE

The School of Social Welfare is a graduate professional school offering: a two-year program of study leading to the degree of Master of Social Welfare; specialized post-master's programs of study for social work practice in Public Health, in Community Mental Health, and in School Social Work; and an advanced program leading to the degree of Doctor of Social Welfare. The master's and post-master's programs prepare for the professional practice of social work, with option for emphasis on clinical or nonclinical methods. The doctoral program prepares for careers in teaching, research, policy development and administration in the field of social welfare and in the profession of social work.

Admission  Every applicant for admission to the School of Social Welfare must hold the degree of Bachelor of Arts or Bachelor of Science from the University of Cali-
fornia or an equivalent degree from a college or university of recognized standing, and must establish his eligibility for admission in graduate standing at the University of California. For details of admission to graduate standing, see the booklet Admission to Graduate Study.

Dates for Filing Application Admission to the School of Social Welfare as a full-time student is possible only in the fall of each year. Applications should be submitted as early as possible beginning in the preceding October, and no later than March 1, for admission in the following academic year. Admission as a part-time student to take courses without field work may be possible in the winter and spring quarters. Applications for admission in the winter quarter for part-time study should be filed by October 10, and for the spring quarter, by January 10.

Master of Social Welfare Program

The prerequisites for admission are: the completion of the group major in social welfare offered in the College of Letters and Science at the University of California, Berkeley, or an equivalent major; or the completion of undergraduate study of psychology, sociology, cultural anthropology, and other social sciences sufficient, in the judgment of the faculty of the School of Social Welfare, to prepare the applicant for graduate study in the School; and suitability for the profession of social work, as determined by the faculty of the School of Social Welfare.

To earn the Master of Social Welfare degree, a student must spend the equivalent of two academic years of graduate study in social welfare, one year of which must have been in residence at the University of California. Students who have completed courses that are part of a social welfare curriculum in an accredited school of social welfare elsewhere than at the University of California may be given appropriate transfer units.

The program of study provides knowledge of human development and pathology, including psychodynamics and psychopathology; social organization; social policy and social welfare services; methods of social work practice, including community organization and social action; and the logic and method of social research. Supervised field work is an important part of the curriculum and is concurrent with academic courses.

Post-Master's Programs

The Schools of Social Welfare and Public Health jointly offer an educational program to prepare social workers for practice in the public health field. Qualified persons may enter the program in the second graduate year or after taking the Master of Social Welfare degree. A third year of advanced courses and field work is offered, with option for choosing a program leading to the Master of Public Health degree, or for studying in an advanced practice nondegree program.

The School of Social Welfare offers a post-master’s program to prepare experienced social workers for practice in Community Mental Health. The curriculum allows maximum flexibility to meet the educational needs and career goals of each student. Courses and field experience emphasize community or-
ganization, mental health consultation and education, administration and policy development, evaluative research, and modes of preventive intervention in the mental health field.

The School Social Work Internship allows graduate social workers to qualify for the California Standard Designated Services Credential. This program may be completed in two quarters of full-time attendance.

**Doctor of Social Welfare Program**

The prerequisites for admission are a master's degree from an accredited school of social welfare, and the intellectual and other qualifications essential to successful performance. Applicants must meet the admissions requirements of the Graduate Division as well as those of the School of Social Welfare.

The student's doctoral program is individually tailored to his particular interests in social welfare. To earn the Doctor of Social Welfare degree, the candidate must (1) complete a course of study in the School of Social Welfare and other departments; (2) spend at least two years in full-time residence; (3) pass written and oral qualifying examinations on his field of specialization in the areas of social theory, social policy and social problems, and professional activity; and (4) write a dissertation demonstrating ability to conduct independent research.

**Special Facilities**

The Social Welfare Research Projects Office, located in Richmond, California, facilitates opportunity for research for students enrolled in the School.

Several branch libraries on the campus, including the Social Welfare Library, the Education–Psychology Library, the Graduate Social Science Library, the School of Public Health Library and the School of Law Library all contain materials of value to social welfare students. Outstanding in its field is the Institute of Governmental Studies Library which contains an unusually fine collection of social welfare documents and reports, invaluable to students in a field where the literature is largely documentary.

The Associated Students of the School of Social Welfare is an active organization for graduate students in the School. As a recognized campus organization, the ASSW has access to the University facilities available for such student groups. The undergraduate Social Welfare Club is a comparable organization for students in the undergraduate group major and other students interested in the profession of social work and the field of social welfare.

Financial aids, in addition to the general University scholarships, are available especially for students in the School of Social Welfare. Information concerning financial aids may be obtained upon request from the School of Social Welfare.

**Social Welfare Extension**

The Social Welfare Extension program, administered by University Extension in cooperation with the School of Social Welfare, offers service to the health and welfare agencies of California through consultation on staff development and through the organization of courses, workshops, and conferences. A sequential
study program leading to a Certificate in the Social Services is offered to groups of employed social service workers.

**Undergraduate Group Major in Social Welfare**

The Department of Social Welfare administers the undergraduate group major in social welfare in the College of Letters and Science. For information see page 519.

**SPECIAL SUMMER PROGRAM FOR TEACHERS**  
(June 23–July 25, 1969)

The Summer Program, an in-service education program in several fields of specialization, is planned and administered by the School of Education in cooperation with other departments of the University. Each course offered carries 9 quarter units, the equivalent of 6 semester units, and one course constitutes a full academic load. Credit earned may be applied toward California teaching credentials. Admission to the program is a separate and different procedure from admission to a regular quarter at the University. Fees for the six-week session in 1969 include a $10 application fee, a $130 tuition fee, and a $2 student union fee—a total of $142. Auditors or visitors are not allowed in the Summer Program classes. Interested persons may obtain further information and an application form by writing the Summer Program Office, 4415 Tolman Hall, University of California, Berkeley, California 94720. The telephone number is (415) 642-5529 or 642-0841.

**BOARD OF EDUCATIONAL DEVELOPMENT**

The Board of Educational Development, a committee of the Academic Senate (Berkeley Division), is designed to "stimulate and promote experimentation and innovation in all sectors of the Berkeley campus... to sponsor, conduct, and direct... continuing studies of the needs and opportunities for educational development; to maintain liaison with [other appropriate committees of the Senate and with schools and colleges] on matters of educational effectiveness, innovation, and for the initiation of experimental courses, programs, and curricula.

"To receive, encourage, and authorize experimental instructional proposals for which neither departmental nor college support is appropriate or feasible; to initiate and administer such experimental instructional programs pending their adoption by a department or other recognized faculty group, for a period not to exceed five years,...; and to provide all possible accessory services for experimental programs within departments, schools, and colleges."

Students, faculty or other University personnel are encouraged to suggest courses, curricula, and other innovative projects which they believe should be available on campus. Course suggestions should justify the need for a course, and describe the sense in which it is experimental. Suggestions by persons other than faculty should specify the faculty whom they would like to see responsible for such a course, as well as other persons involved in its teaching. The Board of Educational Development, if it undertakes to develop a course
or curriculum, will then seek to have it offered as soon as arrangements can be made.

Individual members of the Board of Educational Development are available for consultation. Proposals should be sent to the Chairman of the Board of Educational Development, care of the Assistant Chancellor for Educational Development. A form describing procedures is available through any member of the Board of Educational Development.

SCHOOLS AND COLLEGES IN SAN FRANCISCO

A student who plans to enter one of the University's professional schools or the affiliated college in San Francisco may receive his required preprofessional training on the Berkeley campus.

For information regarding admission requirements, curricula, and costs, the prospective student should write to the dean of the school or college in which he is interested. Address the Dean, School of Dentistry, School of Medicine, School of Nursing, or School of Pharmacy, University of California, San Francisco Medical Center, San Francisco, California 94122; or the Dean, Hastings College of the Law, 198 McAllister Street, San Francisco, California 94102.

Also affiliated with the University is the San Francisco Art Institute with undergraduate programs leading to the degree of Bachelor of Fine Arts or the Certificate of Completion. A program of study at the graduate level leads to the degree of Master of Fine Arts in painting, sculpture, and printmaking. Prospective entrants or transfers may obtain further information from the Registrar, San Francisco Art Institute, 800 Chestnut Street, San Francisco, California 94133.
VI. Research at Berkeley

The Berkeley campus is renowned for its programs of faculty and graduate student research, which for the most part are conducted within the teaching departments. The subject matter of research at Berkeley thus is as diverse as the collective interests of the members of its faculty and students. In some instances, particular departments have established special research laboratories to provide essential services to research projects.

Research also is conducted in organized research units that are established and administered separately from the teaching departments. These special units are sometimes designed to support a well-defined research mission. More often they are interdisciplinary in nature and organized around the projects of a group of faculty and graduate students whose research interests are more general in nature than can easily be encompassed in a single discipline. While the organized research unit aims primarily to support the research of faculty and to assist in graduate student training, public service goals are appropriate and this type of activity is an important aspect of the programs of some units.

The research units are classified in the following manner: (1) Institute. Agency established primarily to coordinate and promote long-range faculty research needs and interests organized around a broad subject area. Research projects and programs normally cut across departmental, school, college, or campus boundaries. Institutes are also formed by departments needing a coordinated approach to broad and varied research activities. (2) Center. An agency established within an institute to further research interests of the faculty in a designated major area; or a separate agency which provides facilities for faculty research projects (for example, Computer Center). (3) Bureau. An academic agency engaged primarily in public service activities and in facilitating research in one or more academic departments related to these activities. (4) Nondepartmental Laboratory. A research organization headed by a director who is a faculty member, with a research staff which may include nonfaculty personnel. (5) Museum. A permanent collection of material used in research and teaching, under faculty supervision. (6) Station. A unit equipped with facilities for research conducted by academic departments and divisions on one or more campuses. (7) Project. Title applied to units carrying out research activities requiring the participation of faculty members of several specializations, but not originating from long-range needs and interests.

Adolph C. and Mary Sprague Miller Institute for Basic Research in Science

Through the benefaction of the late Adolph C. and Mary Sprague Miller, The Regents of the University were able to establish in 1956 an Institute "dedicated to the encouragement of creative thought and the conduct of research and investigation in the field of pure science, provided, however, that there may be conducted at said Institute research and investigation in the field of applied science..."
insofar as such research and investigation are deemed by The Regents to offer a promising approach to fundamental problems.” The donors defined the purpose of the Institute as “to discover and encourage the work of individuals of great talent or promise.”

The Miller Institute, administered by an Advisory Board and Executive Committee, uses the income from its endowment for the appointment for limited terms of Miller Professors who are freed from all other University duties. Local departments in the basic sciences may propose nominations for Visiting Professors. The Institute also offers two-year Miller Fellowships at the recent post-doctoral level. The competition for these is worldwide.

Institute of Business and Economic Research

The Institute of Business and Economic Research was founded as the Bureau of Business and Economic Research in 1941 “... for the purpose of stimulating and facilitating research into problems of economics and of business with an emphasis on problems of particular importance to California and the Pacific Coast, but not to the exclusion of problems of wider import.”

At the present time the Institute, by acting as an administrative agency for projects supported both by outside agencies and by using its University funds, facilitiates productive research by faculty members in Business Administration and Economics. In carrying out this function, the Institute provides research assistance for faculty members from its own funds and an opportunity for training and financial support for qualified graduate students. Among services provided faculty and students are editing, clerical, reproduction, and calculating. Assistance in securing external research support is offered faculty members and graduate students. As far as funds permit, exploratory grants are provided to test the feasibility of larger-scale projects that may qualify for extramural support. Within space limitations, students employed by faculty members are supplied with working space in project areas. Special effort goes to assisting younger faculty members who have not yet achieved outside recognition.

The Institute maintains an active publishing program by which results of research are distributed through four channels: (1) Monograph Series, published through the University of California Press; (2) Special Publications, published and distributed directly by the Institute; (3) Reprint Series, containing results of studies published in article form in scholarly journals; (4) Working Papers Series, permitting limited prepublication distribution of research of immediate interest to scholars.

Office of Research Services

(See page 79.)

Institute of Governmental Studies

The purpose of the Institute of Governmental Studies is to increase the understanding of public affairs, both through the marshaling and dissemination of existing information and through a research program designed to add to present knowledge.
The program of research and related informational and service activities falls within the four areas of public administration, public policy, politics and urban-metropolitan governmental problems.

The Institute is staffed both by professional researchers who specialize in various aspects of these subjects and by academic personnel who participate in the program through joint departmental-institute appointments. All the functions of the Institute are facilitated by a special library of public affairs materials—an extraordinarily broad and rich collection of documents, periodicals, and pamphlets that are indexed in a detailed subject catalogue.

In the fulfillment of its informational and research functions, the Institute publishes a wide range of materials, from books through booklets and pamphlets to monthly checklists and digests. *California Public Survey,* a digest of public information, and *Public Affairs Report,* a bimonthly discussion of current issues in public policy, are issued by the Institute for distribution to interested persons and organizations. Public officials and agencies, private organizations, and individual citizens make use of the Institute’s library and research facilities.

The Institute of Governmental Studies participates in the University’s teaching function both through its library facilities and through training advanced students in public affairs analysis. In addition, the Institute serves as headquarters for two organizations active in governmental research and improvement: (1) the Western Governmental Research Association and (2) the San Francisco Bay Area Chapter of the American Society for Public Administration.

For further information concerning the activities of the Institute of Governmental Studies, write to the Director, 109 Bernard Moses Hall.

**Institute of Human Development**

The Institute, which was established in 1927 as the Institute of Child Welfare, was renamed in 1958 to symbolize its research interest in human development over the whole life span. This interest includes not only the study of behavior as related to physical development and biological change, such as research on child development and aging, but also social transitions and the physiological, psychological and interpersonal consequences of changes in the social environment.

Among the Institute’s facilities is the Harold E. Jones Child Study Center, which houses the University nursery school and serves as a laboratory for the study of the preschool child. The Center is used as a setting for training activities by several departments, in addition to serving as a base for both faculty research and student theses.

The Institute research program includes several long-term longitudinal projects, which afford data for the use of collaborating staff and students, as well as grant-supported projects of shorter duration. A small working library is maintained primarily for the use of the research staff and its affiliates.

**Institute of Human Learning**

The purpose of the Institute is the advancement of experimental research in the field of human learning. The Institute is an interdisciplinary unit, and at present includes faculty members from the departments of Psychology, Education, Anthropology, and Speech. The work of the Institute places emphasis on the
analysis of the basic principles of human learning and on the application of these principles to such areas as education and language development. Programs of research within the Institute are supported by grants from extramural agencies and contracts.

The Institute provides research and training opportunities for graduate students who specialize in the study of human learning. Active areas of interest include verbal learning and memory, perceptual and discrimination learning, mathematical models in learning and concept formation, language development and associative processes, programmed teaching, and individual differences in learning ability. Research seminars and colloquia are held regularly throughout the year.

**Institute of Industrial Relations**

The Institute of Industrial Relations, authorized by the Legislature of the State of California in 1945, began operations in 1946. It is concerned with three principal types of activity. The first is an interdisciplinary research and publishing program currently directed primarily toward the following areas: labor, management, and minority relations; education and manpower training; wages and related problems; economic security programs; the labor market and labor mobility; and social and industrial psychology. Research staff members of the Institute are usually drawn from the regular faculties of the departments of Business Administration, Economics, Political Science, Psychology, and Sociology. The second main activity is research training and financial support of graduate students as graduate research assistants, mostly to individual faculty staff members but also to some group research projects which are related to the Institute's Community Services activities. The latter are under the direction of faculty or other senior professional research staff. The third main activity consists of a set of educational and related research activities in the area of industrial relations for groups of trade unionists, industrial managers, and the general public. These are directed by the Institute's Center for Labor Research and Education, on the one hand, and by its Coordinator of Management Programs, on the other. Emphasis is given to the wider aspects of industrial relations, and in particular to its relationship to urban and minority problems.

**Institute of International Studies**

The Institute of International Studies was established in 1955 to coordinate the rapidly expanding programs of area studies and comparative/international studies on the Berkeley campus. Faculty and student activities in the international field were centrally linked and integrated, and a key point of communication was established between the campus and outside agencies interested in international research and assistance programs. Through the early 1960's the emphasis within the Institute was primarily on area studies, with some attention being given to international service programs. Since then, as the consequence of a growing interest in comparative/international research made possible by the accumulation of enormous amounts of new data by area specialists, and by the development of new techniques for handling such data, there has been a readjustment within the Institute of the balance between area and com-
parative/international studies. The changed emphasis within the Institute and the introduction of new methods have stimulated intense discussion concerning the relationship between comparative and area work and the methods of study most appropriate to each. The consequence has been an important dialogue on theoretical and methodological issues central to the future of academic research and work in the social sciences.

The provision within the Institute for three different research approaches—the comparative/international approach, the area or regional approach, and the theoretical/methodological approach—has created an extremely flexible system for dealing with research problems, and allows the faculty member or student a wide range of choices concerning the emphasis of his work.

**COMPARATIVE/INTERNATIONAL STUDIES**

Comparative studies investigate relationships or problems in several settings, institutions, or countries. The comparative programs of the Institute involve studies within one society or type of society, as well as studies of an overarching nature, embracing various societal types. In the first category are investigations of the socioeconomic and political characteristics of new (or emerging) nations, Communist countries, and Western industrial societies. In the second category is cross-cutting research—research that deals with problems and phenomena encountered in all three major types of societies. These programs and projects are subsumed under the following general categories:

**Comparative National Development Program** Broadly stated, the Comparative National Development Program is concerned with delineating the patterns of change in the developing nations of Africa, Asia, and Latin America. Some of the specific topics singled out for attention under this program are (1) political modernization—the major patterns in the use of power which have propelled (and are propelling) nations into the modern world, (2) education and politics, with emphasis on the role of student movements, universities, and intellectuals in the process of modernization, and (3) cross-national studies in political and social change, stressing the determination of key variables and assessing their significance in specific countries.

**Comparative Studies of Communist Societies and Movements** This program is concerned with gaining a better understanding of various Communist societies by comparing their methods of planning, social organization, economic policy, social welfare measures, legal institutions and principles, formation of elites, etc. In view of the scarcity of reliable data, field work is encouraged wherever feasible, and visits to Communist nations and efforts at systematic data collection on such key topics as refugees, demographic patterns, and Communist movements are subsidized.

**Comparative Elites Program** Elites occupy a strategic position in facilitating understanding of a host of social processes, e.g., stratification, social movements, leadership, governmental stability, revolution and social change. Subtopics of concern comprise the study of the social and personal attributes of elites, careers of elites, the relationship between social context and personal attributes
and careers, the religious and secular values of members of elites, elite strategies and elite structures, and the international or supranational ties among national elites.

**World Population Growth and Demographic Behavior**  This program is concerned primarily with the interplay between population trends and politico-economic development. It involves the accumulation and interpretation of data on basic social traits, as well as the analysis of the implications of changing population characteristics. Priority is given to such studies as research into birth-rate determinants in various types of societies (including the role of individual attitudes) and the hitherto neglected study of population problems in advanced nations.

**Comparative Program on Religion and Society**  This program is concerned primarily with the relationship between religion and social change—the impact of social change on religion, on the one hand, and the role of religion in fostering social change, on the other. It is inspired by the dramatic self-analysis which is currently taking place within established religious organizations concerning their doctrines and practices.

**Economic Development**  This research program encompasses a wide range of interests, including models of economic growth; problems of labor force and employment; planning and economic policy in new nations and the formulation of the theoretical models that can be shown to have empirical application on a comparative basis.

**Comparative Studies of Industrial Societies**  This program is designed to define and explore the alternatives faced by the nations of the West in terms of the shape of their economies, their patterns of social organization, the ideas and political ideologies active within them, the extent of obsolescence of existing social forms and loyalties, including the notion of the sovereign nation-state itself. Important subtopics include (1) the positing of major typologies of variants of the genus "industrial society," including classifications of a historical character, (2) work on change in the elite structure and stratification system of industrialized societies, with special emphasis on mobility and economic organizations, and (3) studies of belief systems and the obsolescence of doctrines, particularly in the context of technocracy, bureaucratization, and the role of science and scientists in public life.

**Social Linguistics and Communication**  A new workshop program in comparative psycholinguistics has been established with the general goal of unifying and actively promoting research in all areas of language behavior. This interdisciplinary program known as the Language-Behavior Research Laboratory, includes plans for studies on topics such as translation, language socialization, the nature of systems of knowledge and belief, the effects of differential language experience on ethnic and social minorities in plural societies, etc., utilizing the techniques of descriptive linguistics, psychological experimentation, anthropological, formal ("componential") analysis, and mathematics.

**International Relations**  Focusing on universal and regional patterns of integration and disintegration, this program is concerned with the systematic interplay of national policies, whether in international organizations or through traditional
diplomatic channels. International legal questions are studied in the same perspective. Questions pertaining to the adequacy of theoretical models used in the past and applicable to the future international systems are encouraged. With an emphasis on large, theoretically relevant concerns and utilizing the comparative method, specific policy issues, such as disarmament and arms control, foreign aid, alliances, etc., are studied.

**Western European Studies** The comparative research in this program involves international as well as intra-national units, concepts, and experiences, with emphasis on (1) public policy, science, and democracy, featuring the role of science and technocracy in the formation of public policy in the West, the role of scientific elites in democracies, and matters of professional training in postgraduate education in relationship to the future of democratic policy-making; and (2) studies in social stratification and the alterations of European society under the stimulus of industrialization, migration, population pressure, and regional economic integration.

**Latin American Studies** The purpose of this program is to promote research into all aspects of socioeconomic and political change in Latin America. As this would indicate, the program is a very flexible one, with some of the main areas of emphasis being economic history, comparative studies of ideology, political modernization, public opinion, political attitudes, special problems of youth, changing patterns of law and social custom, and comparative social stratification. There is also particular concentration on geography, demography, and city and regional studies.

**Individual New Research** Under this program, funds are available for supporting research on topics which fall within the general scope of the Ford Foundation grant, but which are not covered by any of the major programs presently established. The aim is to stimulate innovation and to permit flexibility of response to new developments.

**International Population and Urban Research** Founded in 1956, IPUR has as the central focus of its activities the comparative analysis of population structure and change, urbanization, human migration, and related phenomena.

IPUR is currently pursuing a long-term project on the population of Latin America. This research utilizes census, registration, and survey data—on population, housing, industry, and agriculture—to study fertility, marriage and family patterns, labor-force participation, internal migration, educational attainment, occupational and industrial structure, and urbanization. Emphasis is placed on the relation of these variables to economic development and social modernization.

IPUR is also undertaking a study of world urbanization similar to the study it made several years ago. Of particular interest is the period since 1950. In addition, work is being done on the history of population during the eighteenth, nineteenth, and early twentieth centuries, mainly for the purpose of comparing the development of the present-day underdeveloped countries with the evolution of the modern industrial nations.

(Graduate students wishing financial and other assistance in completing work
for the Ph.D. degree in the field of population or urban research may qualify for research positions at IPUR, regardless of discipline, if their projects are congruent with ongoing programs of research.)

**Professional Schools Program** This program is concerned with three broad areas: (1) the training of foreign undergraduate and graduate students for professional careers, (2) the training of U.S. undergraduate and graduate students for professional work abroad, and (3) increasing the effectiveness of faculty members of the professional schools in educational and professional or consulting assignments abroad. To accomplish its objectives, the program sponsors individual and group faculty research projects, provides funds and assistance for conducting conferences and seminars, and maintains a library of relevant materials.

**International Legal Studies Program** The basic objectives of this program are (1) to stimulate and assist faculty research on international and comparative law topics, (2) to strengthen the School of Law curriculum in international and comparative subjects through establishing new courses, preparing new course materials, bringing practicing lawyers and legal scholars from other campuses to Berkeley for contact with students and faculty, etc., (3) to attract law professors and scholars from foreign countries to the Berkeley campus for teaching, research, and consultation purposes, and (4) to provide direct financial assistance to law students through fellowships for travel study overseas, grants-in-aid to graduate students from abroad, etc.

In addition to those described above, there are many other activities and projects, both major and minor, sponsored by the Institute through its various programs. Information about specific types of projects, or further information about those described above, can be obtained by writing to the Director, Institute of International Studies, University of California, Berkeley 94720.

**Faculty Assistance**

The primary means by which the Institute carries out its comparative programs is through various forms of assistance to Berkeley faculty members. (For purposes of determining eligibility for assistance, any individual is treated as a Berkeley faculty member as soon as he receives a firm offer from Berkeley, but actual assistance is contingent upon his joining the Berkeley faculty. Members of the faculties of other campuses of the University of California are eligible only if their work is part of a well-integrated collaborative effort with a Berkeley faculty member or Berkeley-based project.) Funds are available for released time, for teaching, travel, supplies, data processing and computer services, clerical and research assistance, library acquisitions, special visitors, seminars, conferences, and research-training projects.

Research proposals may be submitted at any time. These proposals, according to their quality and feasibility, may be supported with amounts ranging from a few hundred to several thousand dollars. Members of all disciplines and departments are eligible for funds, insofar as they address themselves to comparative/international issues relevant to the social sciences. Not all research need be comparative/international in substance. Comparisons within a single country or case studies of specific processes, ideas, or institutions are acceptable when
their significance for wider theoretical concerns can be made clear. (Further information concerning how and where to apply for funds, and the exact dates for submitting proposals and for the announcements of awards, can be obtained by writing to the Institute.)

**Student Assistance**

Though faculty research constitutes the core of the research activities of the Institute (and its area centers), it has a particularly impressive student aid program which emphasizes training in research and close faculty-student collaboration.

**The Research Apprenticeship Program** The Research Apprenticeship Program is based on the assumption that students can derive immense benefits from direct collaboration with faculty members in research projects, and is specifically designed to give students training in a variety of research procedures. The results of the collaboration between the faculty member and student should serve as a basis for the student's doctoral dissertation, as well as for joint published reports on the research. Since this program clearly requires intimate working relationships between students and individual faculty members, appointment as a Research Apprentice depends upon nomination by the faculty member involved and approval by the Executive Committee of the Institute. Appointments generally run for at least two years. One year is normally spent in doing research abroad to provide training in field procedures.

**The Grants-in-Aid Program** The purpose of this program is to support students in the early stages of graduate study in order to attract them to the field of comparative international studies. Occasionally, support may be provided at the dissertation stage. Grants-in-aid are generally in the range of $3,000 or more, and are coordinated with the Fellowship Program of the Graduate Division.

**Research Facilities**

In addition to the types of assistance to faculty members and students detailed above, the following services and facilities are available through the Institute and its centers:

**Library Facilities** Supplementing the Main Library of the Berkeley campus, with its vast store of reference materials, there is a special Institute of International Studies Library, as well as several area center reading rooms. These are constantly expanding, both in terms of services and materials.

**Data Processing Facilities** The Institute collaborates with the Survey Research Center at Berkeley in maintaining the International Data Library and Reference Service. This facility is designed to assist social scientists in obtaining, processing, and analyzing domestic and foreign survey materials. Basic data from over 150 studies concerning the developing countries (principally those in Asia and Latin America) as well as from several hundred studies concerning Europe and North America are contained on IBM cards for rapid processing.

**AREA STUDIES**

The Area Centers and Committees organize, sponsor, and facilitate the work of scholars in different departments of the University who are particularly con-
cerned with specific areas. They maintain the research resources and facilities essential to the study of these areas: basic reference works, pamphlets, newspapers, reading rooms, language programs, etc. In addition, they conduct interdisciplinary seminars and provide assistance to scholars in planning research projects and formulating proposals for financial and other types of assistance.

Committee for African Studies  As the result of an increasing interest in African affairs on the part of faculty members and students in several departments, a Committee for African Studies was organized on the Berkeley campus. The Committee forms the core of an interdisciplinary colloquium in which African specialists, other faculty members, and students participate.

The Committee promotes the collection of research materials on Africa at Berkeley, and cooperates with the African Studies Center at UCLA in sponsoring visits by African specialists from educational institutions throughout the world.

Through the University and the Institute of International Studies, the Committee assists students in obtaining fellowships and grants-in-aid for African studies.

Center for Chinese Studies  The Center was established in 1957 to meet the urgent need for social scientists interested in advanced research on contemporary China. The Center has been unique in its focus on the development of mainland China since 1949, but within this emphasis, its interests are extremely broad, and include the fields of anthropology, economics, geography, modern history, law, sociology, and political science.

The Center supports individual research by faculty members (at Berkeley and other campuses of the University) in the contemporary China field. It cooperates in a group research project on the current Chinese language, and conducts seminars and meetings on the Communist world jointly with the Center for Slavic and East European Studies. In addition, the Center sponsors a program of research colloquia and informal luncheon meetings which are generally open to all those with scholarly interests in Communist China. To graduate students with a serious commitment to research on contemporary China, the Center offers a program of grants-in-aid. This is supplemented by special tutorial assistance in developing the grantees' command of current Chinese.

The Center maintains a large collection of newspapers, periodicals, and other source materials from, and relating to, Communist China. This is now one of the principal specialized collections in the field. Publications of the Center include: China Research Monographs; Studies in Chinese Communist Terminology; California Books on Modern China (in collaboration with the University of California Press); and a reprint series of articles and shorter studies by members of the Center.

Center for Japanese and Korean Studies  The Center is the unifying organization for all faculty members and students interested in Japan and Korea. It brings together scholars from many disciplines whose interests focus on the analysis of the factors which determine the special social characteristics of these two countries.

The Center facilitates the individual research programs of faculty members
by providing research assistantships, travel funds, research materials, etc. Several
grants-in-aid are awarded annually to graduate students working in Japanese
or Korean studies.

A series of books and monographs concerned with Japan and Korea is spon-

sored by the Center. It also conducts a monthly colloquium at which papers in
this field are presented and discussed.

**Center for Latin American Studies** Established in 1956, the Center supports
faculty research projects and provides supplementary grants-in-aid to graduate
students. Current and recent faculty research projects include: historical
demography of Mexico; comparative economic history of Latin America; silver
mining in colonial Mexico; village law in Mexico, and geography of northeast
Brazil. Outstanding graduate students in Latin American studies are designated
as Center Fellows; although no monetary support accompanies this award,
Center Fellows are given small carrels, free copy service, letters of introduction
when leaving for Latin America, and other aid in their research activities.
Authors of outstanding doctoral dissertations are given a stipend and the option
of publication by the Center. Each year the Center publishes the “Directory of
Faculty with Latin American Research Interests,” which provides information
on publications and current research of about one hundred faculty members
doing research on Latin America. The Center also administers the University of
Chile-University of California Cooperative Program for the Berkeley campus.

The Center sponsors a number of lectures and seminars. The Dissertation
Seminar provides an opportunity for students anticipating or returning from
field research to discuss common problems of research design and data collec-
tion. The Stanford-Berkeley Colloquium, hosted jointly with the Committee on
Latin American Studies at Stanford, facilitates scholarly interchange between
faculty and graduate students of the two universities. At informal luncheon meet-
ings faculty and graduate students discuss their current research. The Center also
holds formal lecture series; topics for recent lecture series included “The Carib-
bean in Crisis” and “Brazil.”

The Berkeley campus has one of the nation’s best collections of historical
materials dealing with Latin America, and the Center is actively promoting the
acquisition of additional contemporary materials. In addition, the Center Reading
Room has a collection of journals and recently published books related to Latin
America, as well as airmail editions of major Latin American newspapers.

**Committee for Middle Eastern Studies** For a number of years, the Berkeley
campus has had impressive resources in this area, in terms of faculty, library
materials, and course offerings, and in 1962 the Committee for Middle Eastern
Studies was established, reflecting a growing interest in the area within several
departments.

The Committee provides the organizational form necessary for an integrated
program of research and training. It sponsors public lectures, symposia, and
conferences devoted to the analysis and discussion of the problems of the Middle
East, in which distinguished visitors from American and foreign universities
participate. In addition, it supports the work of faculty members by securing
funds for domestic and overseas research. The area of interest includes Turkey,
Iran, Afghanistan, Israel, and the Arab States of the Middle East and North Africa.

Center for Slavic and East European Studies  Established in 1957 as the successor to the former statewide Institute for Slavic Studies, the Center continues the long history of Slavic studies on the Berkeley campus. Its area of concern is the Soviet Union and the Communist countries of Eastern Europe, with emphasis on the social sciences, modern history, geography, and literature.

The Center's funds are devoted primarily to the support of research projects of faculty members, including some on campuses of the University other than Berkeley. It organizes various activities such as colloquia, conferences, and public lectures, and maintains a reading room with newspapers, periodicals, and miscellaneous materials from and about the USSR and Eastern Europe, as well as such research tools as files of newspaper clippings and bibliographical cards.

Financial support for graduate students is mainly in the form of research assistantships. However, some grants-in-aid are also available from the Center, primarily for the support of summer study and language training.

Center for South and Southeast Asia Studies  South Asia Studies at Berkeley have developed significantly since their establishment in 1906 and Southeast Asia Studies since their formal inauguration in 1960. The two Centers have now merged, the Center for South and Southeast Asia Studies already serving improved communications, courses, research activities, and library services. The Berkeley campus, already distinguished for its Asian Studies, has thus further developed its comprehensive and coordinated approach to the problems of social, economic, and political development in Southern Asia.

The teaching program continues to grow at both graduate and undergraduate levels. With the assistance of grants from the U.S. Office of Education, the Center supports the teaching of modern South and Southeast Asian languages and literature—most notably in Hindi, Urdu, Tamil, Malay-Indonesian, Thai and Tagalog. A number of departments in the social sciences and humanities offer courses including or focusing on South or Southeast Asian material, and interdisciplinary courses for graduates and undergraduates are well established. Scholarships are available for the Summer Language Institute and the masters' program in South Asia Studies.

The Center serves to facilitate the research activities of faculty members on all campuses of the University through grants-in-aid, research Assistantships and travel funds. Research results, including those of visiting lecturers, are presented and discussed in lectures, colloquia, seminars, and various forms of publication. Librarians and bibliographers, especially trained in South and Southeast Asia library services, are of special assistance in maintaining and extending the library collections—among the most extensive in existence.

THEORETICAL/METHODOLOGICAL STUDIES

The present activities of the Institute of International Studies with regard to the development of systematic social science theory and methodology are directed toward reaching conclusions of general significance for social science research in a complex and swiftly changing world. Three primary objectives are
involved in these efforts. The first is to clarify the nature of comparative and area studies, and to define the role they are to play in the social sciences during the next several years. The second is to relate the methodologies of comparative and area studies to general social science theory in order to provide a coherent framework for research. The third is to make the results of these efforts available to professional colleagues and students, through publications, conferences, and seminars.

The Research Scholars Program  This program is the core of the Institute's activities in the theoretical/methodological field. It involves a group of distinguished representatives from various disciplines within the social sciences meeting regularly to discuss problems of theory and methodology. These representatives, designated Research Scholars, and generally numbering from six to eight, are drawn from the faculties of Berkeley and other campuses of the University of California, as well as from other educational institutions throughout the world. Appointments as Research Scholars are for one year, and may be full- or part-time. Each Scholar is given ample opportunity to pursue his own particular interests, in addition to his work as a participant in the group seminar. As a Research Scholar, he is a member of the editorial board of the new publication Comparative Studies, which focuses specifically on issues of social science theory and methodology.

Institute of Library Research

The Institute of Library Research is a University-wide research organization currently with branches at Berkeley and Los Angeles. The Institute is closely associated with the School of Librarianship and provides opportunities for faculty, graduate students, and visiting scholars to participate in its research activities.

Broadly conceived, the Institute has the following three related objectives:

Research: to pursue a long range program of fundamental research in library science, with special emphasis on the use of formal techniques and information processing technology to attack basic problems of library science.

Education: to develop special facilities required for advanced education and research in library science, with special emphasis on the development of facilities for experimentation with problems of on-line interrogation, search, file organization, and related problems of automatic information storage and retrieval.

Service: to assist all of the libraries of the University of California in coping with the immediate and pressing operational problems, with special emphasis on the design of improved systems and procedures for automating clerical functions and for the use of new technology for storing and sharing library data.

Institute of Marine Resources

The Institute of Marine Resources is a University-wide organization with headquarters on the San Diego campus. Its objectives are to encourage and support research on the resources of the ocean.

On the Berkeley campus the Institute of Marine Resources supports a research unit in Marine Food Science, within the administrative framework of the Depart-
Institute of Personality Assessment and Research

The Institute was established in 1949 through a grant from the Rockefeller Foundation for the study of human effectiveness and has been maintained since then through grants from the Carnegie Corporation of New York, the National Science Foundation, the National Institute of Mental Health, the Office of Education, and other agencies, as well as through regular intramural support by the University. The several interrelated objectives of the Institute's work are:

1. The development of techniques and procedures for the psychological assessment of the functioning of the human individual, including standardized appraisal instruments, "living-in" assessment methods, life-history inquiries, etc.

2. The utilization of these assessment procedures in studies seeking to discover (a) the characteristics of persons who are highly effective in their personal lives and professional careers, and (b) how such effectively integrated persons are produced in our society, with respect to such determinants as: family and childhood background; sex; educational experiences; social, intellectual, and physical environment; life-history in general.

3. The administration of assessment instruments to samples of various professional groups, e.g., medical students, student writers, engineering students, social welfare students, and architecture students, as part of selection procedures, in order (a) to make predictions concerning career potential, and (b) to conduct follow-up studies of subsequent career success or failure in validation of the predictions.

4. The application of the knowledge gained from the foregoing types of studies on the assessment and understanding of effective persons to the goals of nurturance and training of individual creativity, productive thinking skills, aesthetic preferences and abilities, high-level social functioning and psychological competence and well-being in general.

Most senior members of the staff hold joint appointments in teaching departments of the University, and consequently the Institute, though it offers no formal instruction in courses and seminars, is an important training and research facility for students who wish to specialize in the study of persons. Research assistantships are available to graduate students.

The investigations of the Institute are supported in part by grants from philanthropic foundations and governmental agencies, and by contract research.

Institute of Urban and Regional Development

The Institute was established in 1963 to focus research attention upon the problems of city, metropolitan and larger regional development. Its present
Centers, described below, are to be supplemented in the future by a program directed toward urban social problems. In addition to the Center programs, the Institute works with other research organizations on such common problems as transportation and land use models, urbanization processes in developing countries, development decision-making in metropolitan areas, and the regulation of development. It draws upon faculty and graduate student resources in the professional schools, social and natural sciences, and the arts.

The Center for Real Estate and Urban Economics, established in 1950 to conduct research in real estate and land economics, and to assist in improving methods in the industry and related government services. Its research program includes projects on real estate and housing markets, finance, the organization and administration of the industry, and the economic, demographic and fiscal forces affecting urban growth. The Center publishes research monographs and reprints, and jointly with its counterpart on the Los Angeles campus issues an annual report designed to acquaint real estate practitioners with current developments in real estate research and education. It provides research support for faculty members and graduate students in business administration, city and regional planning, economics, finance, statistics, and related fields.

The Center for Planning and Development Research, established in 1962 to conduct research in city and regional planning and related social and technical processes. In addition, the Center provides service to governmental and private agencies in the development of new techniques for the solution of development problems. Typical projects include studies supporting the California state development plan; a study of the implications for urban development of concepts arising from aerospace research; a history of city planning; and studies on environmental behavior in the metropolitan region, community value measurement, programming and design of residence hall environments, urban rehabilitation, residential environment and health, interregional population growth, neighborhoods standards, planning for solid wastes, as well as individual work on community facilities and services, amenities and community design. While closely related to the Department of City and Regional Planning, the Center serves faculty and graduate students in agricultural economics, architecture, business administration, criminology, engineering, geography, law, political science, sociology, and systems analysis.

Institute of Transportation and Traffic Engineering
(See page 137)

LABORATORIES*

Cancer Research Genetics Laboratory
(See under Zoology)

Electronics Research Laboratory
(See under Engineering)

* For a list of additional laboratories, described under departmental headings, see page 134.
Bodega Marine Laboratory

The Bodega Marine Laboratory is a University-wide facility designed to support research and teaching in the marine sciences and is located on Bodega Head, adjacent to the town of Bodega Bay, in Sonoma County. The property consists of 327 acres fronting on both the ocean and on Bodega Harbor. The property is treated as a biological refuge, and its mile-long ocean frontage is protected as a California Marine Life Refuge.

The Laboratory began operation in 1966 in its present location and is a regularly budgeted research facility within the University. It contains 25 research laboratories and a complement of equipment for work in biochemistry, physiology, developmental biology, microbiology, ecology, botany, zoology, and marine geology. Two well-equipped teaching laboratories which will accommodate a total of 40 students are included in the building. A large aquarium room contains numerous aquaria, ranging in size from 10 to 600 gallons, plus concrete tanks with a capacity of 1,000 gallons. There also are concrete pools located in the Laboratory courtyard. The aquarium room, teaching laboratories, pools, and many of the research laboratories are supplied with unfiltered, continuously flowing sea water. The Laboratory also operates a number of small boats which support collecting and research activities and operates a housing facility for students and Laboratory personnel.

The facility is available to graduate students and faculty in support of their research activities and the classrooms are available to support teaching activities of the academic departments.

Laboratory of Chemical Biodynamics

The Laboratory of Chemical Biodynamics applies the sciences of chemistry and physics to the fundamental problems of biology. Its work is based on the modern view of the living cell as a dynamic system of chemical transformations, and research in this Laboratory emphasizes chemical biodynamics as a progressive step in the quantitative development of biology. The individual research activities are generally concerned with the dynamic molecular basis for growth and the regulation of energy transfer and transformation as well as the accumulation, storage, transfer and read-out of biological information.

The Laboratory is a research facility for members of various University departments, presently including Chemistry, Physics, Botany, Molecular Biology, and Psychology.

Students may do thesis work for presentation to the Graduate Division for degrees in these and other departments and may engage in group curricula such as Biophysics, Comparative Biochemistry, Neurobiology, and Plant Physiology, by arrangement with faculty members involved. The Laboratory is also a unit of the Lawrence Radiation Laboratory.

Donner Laboratory

The Donner Laboratory was founded to integrate the basic sciences of physics, chemistry, and mathematics in carrying out the program in biology and medicine of the Lawrence Radiation Laboratory. The teaching center of the academic
Division of Medical Physics, which is an outgrowth of the research program of the Laboratory, is also housed here. The main laboratory building is located next to Founder's Rock at the northeast corner of the campus, and not far away is the Donner Pavilion, the Laboratory's investigative hospital wing. Other laboratory facilities including animal housing and various facilities for animal and human investigation, are located in the Hill Area of the Lawrence Radiation Laboratory. The staff includes eight professors, forty-seven postdoctoral staff members, and seventy-eight research fellows and students.

Research in biophysics is conducted on macromolecular, cellular, and animal systems. Radiobiology and space biology are subjects of active interest. Molecular fields of study include active study of lipoproteins, the nature of enzyme function, the biophysics of nucleic acids, and the study of molecular excited states. Cellular studies center around basic radiation genetics of microorganisms, electrical properties of cells and subcellular particles, cell division dynamics, properties of mammalian cells in vitro including studies on neurons. Metabolic studies using various biophysical techniques including radioactive tracer studies are carried out on hemopoiesis, heart disease, neoplastic disease, diabetes, endocrine diseases, atherosclerosis, aging, radiation, etc. The Laboratory has modern equipment and instrumentation for biophysical and medical research including the accelerators of the Lawrence Radiation Laboratory. It also is a pioneering center for training in the rapidly advancing field of nuclear medicine, with its clinic and hospital wing, and its academic program for advanced training for young physicians.

Students may work for several degrees including the A.B. in biology and physics (individual group major), the Master of Bioradiology (a degree in the field of health physics), the Ph.D. in biophysics or in medical physics (for those already holding the M.D. degree). Several predoctoral and postdoctoral research positions and fellowships are offered. Postgraduate physicians are trained in biophysics and nuclear medicine.

**Hormone Research Laboratory**

The activities of the Hormone Research Laboratory center about research on the chemistry and biology of the hormones from the anterior and intermediate lobes of the pituitary gland. The isolation and characterization of a great number of these hormones have been achieved here, and present research is concerned with obtaining the hormones in their purest form, investigating their biological activities, and accomplishing their chemical structure and synthesis. An equally important objective is the training of predoctoral and postdoctoral investigators in the techniques and methods requisite for work in the fields of protein chemistry and experimental endocrinology. In addition, the Laboratory has been a source for highly purified pituitary hormones for biological and clinical investigations, not only within the University community but also throughout the world.

Seminars and courses in protein chemistry, biochemical aspects of endocrinology, and the biochemistry of hormones have regularly been offered by the staff of the Laboratory. A number of research assistantships and postdoctorate fellowships are provided for qualified applicants each year.
Inorganic Materials Research Laboratory

This laboratory is a research organization which functions as a division of the Lawrence Radiation Laboratory. The 32 principal investigators in the Inorganic Materials Research Laboratory are also faculty members in various campus departments including Materials Science and Engineering and Nuclear Engineering in the College of Engineering; Chemistry and Chemical Engineering in the College of Chemistry, and Physics in the College of Letters and Science. Graduate student instruction and research (for approximately 200 graduate students) is carried out under the direction of these principal investigators. The purpose of the Inorganic Materials Research Laboratory is to increase the understanding of the factors that determine the properties of materials by interdisciplinary research and education. Through such cooperation it becomes possible to undertake major comprehensive research problems previously conducted as separate, incomplete fragments. This laboratory provides facilities for research in metallurgy, ceramics and nuclear engineering as well as inorganic and physical chemistry and solid state physics. Research topics include: experiments at very high pressures and temperatures and ultra-low pressures and temperatures; synthesis of inorganic materials; evaluation of influences of microstructure, composition, temperature, pressure and other variables of mechanical properties; spectroscopic and mass spectroscopic investigations of high temperature vapors; studies in crystal imperfections, high strength and fracture toughness, high field superconductivity, and electric and magnetic properties of solids, and mechanisms of reactions.

Lawrence Radiation Laboratory

The Ernest O. Lawrence Radiation Laboratory, Berkeley, is a major campus facility for fundamental research in high-energy physics, nuclear chemistry, inorganic materials, medical physics, and bioorganic chemistry. Principal research instruments at the Berkeley laboratory include the 6.2 billion electron volt Bevatron, the 184-inch synchrocyclotron, the Heavy Ion Linear Accelerator, and the 88-inch cyclotron. Opportunities are available for graduate students to perform research at the Berkeley laboratory under the direction of faculty members and staff scientists.

The Livermore site of the Laboratory conducts a separate, primarily applied research program, part of which concerns nuclear weapons development and other classified subjects. Major Livermore programs also include unclassified basic research in the physical sciences, controlled thermonuclear reactions, biomedicine, and peaceful uses of nuclear explosives.

Naval Biological Laboratory

The Naval Biological Laboratory, a research facility in the School of Public Health, operates under a contract between the Regents and the Office of Naval Research. Naval Medical Research Unit No. 1 of the Bureau of Medicine and Surgery, Department of the Navy, actively collaborates with the Laboratory. Research is concerned with fundamental investigations in the general areas of aerobiology, experimental pathology of infectious diseases, and medical micro-
biology as they apply to public health and to medical problems of the Navy. The Laboratory is staffed by civilian and naval personnel under the direction of a University appointed director. Facilities are available for use by faculty, graduate students, and postdoctoral fellows.

The Laboratory is uniquely equipped to study highly infectious diseases. It maintains its own engineering staff, machine shops, photography laboratory, and service facilities required for research in the fields of aerobiology, microbiology, public health and related sciences. Inquiries concerning the Laboratory should be addressed to: Director, Naval Biological Laboratory, Building 844-A, Naval Supply Center, Oakland, California 94625.

**Laboratory of the Rockefeller University**

This Laboratory is maintained by the Rockefeller University for the research of Professor John H. Northrop. The funds are supplied entirely by the Rockefeller University and are administered partly through the Rockefeller University and partly through the Department of Medical Physics, Donner Laboratory, and the Department of Medical Microbiology and Immunology, School of Public Health.

It has no official academic duties. The work at present is concerned with the origin of bacterial viruses.

**Space Sciences Laboratory**

The Space Sciences Laboratory is a multidisciplinary laboratory engaged in basic research in the physical, engineering, biological, and social sciences on problems related to and motivated by the exploration of space.

Its major purpose is for faculty and graduate student research, and the projects are related to curricular programs. The program covers a broad range of work in the space science. Current projects in fields of engineering comprise studies in systems theory, microwave radiometers, and geomagnetism. There are extensive programs in space physics, solar terrestrial relationships, exobiology (extra-terrestrial life), and biological systems in the interplanetary environment.

The Laboratory supports an extensive program in the behavioral sciences with emphasis on the study of research and development organizations and the economic aspects of research and development.

The programs are supported by University funds as well as grants and contracts from the research branches of the U.S. Department of Defense, the National Science Foundation, and the National Aeronautics and Space Administration. The main center is the Space Sciences Laboratory on the hill area above the Berkeley campus; additional facilities are located in various parts of the campus and at the University's Storage Facility in Richmond.

**Statistical Laboratory**

(See under Statistics)

**Virus Laboratory**

The Virus Laboratory was established by The Regents in 1948 as a regularly budgeted research organization within the University for the purpose of con-
ducting research on the biochemical, biophysical, and biological properties of animal, bacterial, and plant viruses. Since that time it has become one of the foremost virus research centers in the world, and it is the only one in which work on all kinds of viruses is in progress. Major achievements include a new technique for freeze-drying preparations for electron microscopy, the crystallization for the first time of a virus affecting animals or humans (poliovirus), the discovery that preparations of nucleic acid from tobacco mosaic virus possess virus activity, the first reconstitution of a virus from its component parts, the first demonstration of subunits as a characteristic feature of the architecture of virus particles and of certain enzymes, the invention of the separation cell for use in ultracentrifugation, the first information regarding the chemical nature of virus mutation, the elucidation of the exact sequence of the 158 amino acids of tobacco mosaic virus particles, and the discovery of ribosomes. Research on virus-cancer relationships, cancer virus nucleic acids, cellular control mechanisms, and on a cell-virus interaction in tissue cultures is being conducted under grants from the U.S. Public Health Service. The discovery of the helper-virus phenomenon was a major achievement and is now providing a new approach in the search for human cancer viruses.

Scientists come to the Virus Laboratory from all parts of the world, and each year representatives from many foreign countries have been in attendance for postdoctoral training. Thirteen members of the staff hold appointments in the Department of Molecular Biology and in other academic departments and have supervised the work, including research in the Virus Laboratory, of fifty-six graduate students who have received the Ph.D. degree. During the present year there are thirty-four postdoctoral students plus forty-one graduate students working toward the Ph.D. degree with staff members in the Virus Laboratory. Training in fundamental virology is, therefore, being offered at the predoctoral and the postdoctoral levels by a staff noted for its research accomplishments.

Additional Laboratories
(Described under departmental headings, see Index)

Cancer Research Genetics Laboratory
Forest Products Laboratory
Hydraulic Engineering Laboratory
Industrial Engineering Laboratories
Low-Temperature Laboratory
Minerals Research Laboratory
Nuclear Engineering Laboratory
Operations Research Center
Radio Astronomy Laboratory
Sanitary Engineering Research Laboratory
Sea Water Conversion Laboratory
Soil Mechanics and Bituminous Materials Laboratory
Statistical Laboratory
Structural Engineering Materials Laboratory
Thermodynamics Laboratory

MUSEUMS AND BOTANICAL FACILITIES
(See Index)

Museum of Anthropology
Museum of Paleontology
Museum of Vertebrate Zoology
Botanical Garden
Herbaria
RESEARCH CENTERS, STATIONS, AND OTHER UNITS*

Center for Research and Development in Higher Education

The central purpose of the Center for Research and Development in Higher Education is to assist individuals and organizations responsible for American higher education to improve the quality, efficiency, and availability of education beyond the high school. The Center provides opportunities for research on problems of higher education by faculty members, visiting scholars, graduate students and the Center's own research staff. It is authorized to hold conferences on higher education in cooperation with other University agencies or outside educational organizations, to provide fellowships or internships, to publish research reports and conference proceedings, and to work cooperatively with higher education institutions and educational agencies throughout the U.S. in reviewing the findings from research and their implications for higher education.

The Center's activity is channeled into three major, interrelated areas: 1) educational impact and student development, 2) viability of institutional structures and functions, and 3) developmental projects directed to improvement of higher education. It is currently engaged in a number of extensive research projects involving the cooperation of high schools, colleges and universities in several states. These include studies of student development in small liberal arts colleges and large, complex institutions; studies of factors related to attendance at various types of higher education institutions; a longitudinal study of how, when and why high school students make educational career decisions which lead to different outcomes after they leave school; and a study of statewide planning in higher education.

The Center has provided educational consultants for projects in Kenya, Japan, and Chile. The Center and the Western Interstate Commission on Higher Education hold an annual conference in Berkeley on research in higher education.

Center for the Study of Law and Society

The Center for the Study of Law and Society conducts field studies of law in action and social factors bearing on the development of law and legal theory; the Center also sponsors colloquia and study groups for faculty and students interested in this work. Current areas of interest include: perspectives on law enforcement (e.g. "law and order"); sentencing decisions; legal processes within large organizations; (e.g., the university); and the organization of prison and parole systems. Historical and comparative studies are encouraged.

The Center is primarily a facility for faculty and students in the social sciences, including the School of Law, but it also serves some visiting scholars and has a small professional research staff. Some stipends for faculty members are available, as well as training for graduate students through appointment as research assistants.

* Additional facilities are described under departmental heading. See list on page 138.
Computer Center

The Computer Center serves the entire campus by (1) providing and operating a system to meet the computing and information processing needs of the campus and (2) conducting research in computer science.

The principal components of the system are the computer (a Control Data 6400 system), the operating and programming systems (FORTRAN, ALGOL, Assemblers and others) and the user-file storage (disks and tapes). The Center also has an IBM 360/40 off-line computer for peripheral operations.

A program library and a consultation service are maintained to provide information about the operating and programming systems and to assist users to secure appropriate programs for the solution of problems or the processing of data. Assistance and consultation are also available on the formulation of problems and the suitability of programs.

Instruction in programming is available through regular courses offered by several academic departments and University Extension.

In addition to programming consultation, the Center undertakes programming tasks for users. Those having programming needs may call upon the Center's application programming group for service. The Center also provides a key-punching service for users of the computer.

One of the Center's major efforts is now devoted to developing an advanced computing system which will permit interplexed operations from a large number of remote input-output stations and peripheral data processors.

Center for Research in Management Science

The Center for Research in Management Science, formally established in May, 1961, is composed of faculty members drawn from Business Administration, Economics, and related disciplines, who are actively engaged in research in problems of management. Research topics include: theoretical and empirical studies of organizations, experimental studies of individual and group decision making, decision rules for optimization, topics in mathematical economics, and applications of computer technology to organizational problems.

The Center, located in Barrows Hall, provides financial aid to doctoral candidates by employing them as research assistants on faculty projects, and thus also places them in a research environment for training with recognized workers in the field.

Research facilities include the Management Science Laboratory located in Barrows Hall. This laboratory, partly financed by the National Science Foundation, offers facilities for group experiments in and for research in man-computer interactions.

Visiting scholars join the staff during the summer or for varying periods during the academic year.

Both formal seminars and informal workshop sessions are held regularly to review work in progress and to hear distinguished visitors.

Earthquake Engineering Research Center

(See under Engineering Laboratory Facilities)
Survey Research Center

The Survey Research Center is charged with assisting faculty and students in all social science departments and schools, in the design, development, and execution of research using survey methods. Organized around a method rather than a single substantive topic, the Center conducts research in a wide variety of fields. Projects are currently under way in education, political behavior, religion, prejudice, consumer behavior, and poverty. The Center also carries on a program of methodological research to increase the precision and the range of applicability of survey procedures and contributes to advanced training in social research by providing laboratory resources and research apprenticeships for graduate students.

The Center seeks as well to serve the University and the community-at-large wherever survey research can contribute to the formulation of educational and public policy.

Operations Research Center

The Operations Research Center is an interdisciplinary research unit which is concerned with the problems of optimal operation of complex systems and the development of necessary theoretical methodology.

Typical research topics are mathematical programming, combinatorial problems, reliability theory, network flow theory, statistical inference in stochastic problems, critical path scheduling, programming under uncertainty, theory of cost and production functions, large-scale control systems, and stochastic congestion problems. Applied research topics include forest fire control, water resources management, waste disposal systems, traffic and transportation systems, highway accident systems, systems reliability, and models of computer service systems. Because of the growing interest and importance of efficient methods of utilizing governmental resources, increased emphasis is being placed on socio-engineering applications rather than on individual industrial problems.

The research efforts of the Center are closely integrated with the graduate programs of the Department of Industrial Engineering and Operations Research. Related graduate courses are listed under the department and also listed as part of the Engineering Science curriculum under the Operations Research options. Faculty, visiting scholars, postgraduate research fellows and graduate research assistants participate in the program of the Center.

The Institute of Transportation and Traffic Engineering

State law provided for the establishment of this Institute, which has units on both the Berkeley and Los Angeles campuses. It conducts research related to the planning, design, and operation of highway, air, urban, and other transportation systems. At Berkeley, most of its staff members serve on the faculty in the Division of Transportation Engineering of the Department of Civil Engineering, which offers graduate programs leading to master's and doctoral degrees. The individual graduate student can follow any of a wide range of interests through course selections in these programs. Institute research extends from the relatively precise applied sciences of materials and structures to such fields as trans-
portation systems analysis and design, and engineering economics and administration. Some Institute research is independent, some in cooperation with outside agencies, such as the Federal Aviation Agency and the California Division of Highways. Many graduate students in transportation engineering study under fellowships or other awards; others participate in Institute research through part-time employment. The Institute maintains laboratories, field research equipment, and an outstanding research library.

**White Mountain Research Station**

The White Mountain Research Station provides basic laboratory and living accommodations for faculty and students requiring teaching and research facilities in the high altitude environment. Since its inception in 1950 the Station has been the site of a wide variety of studies in the agricultural, biological, and physical science fields.

The Station comprises three separate locations in the White Mountain Range east of Bishop, California: the Crooked Creek Laboratory, 10,150 feet above sea level; the Barcroft Laboratory, 12,470 feet; and the Summit Laboratory, 14,250 feet. In addition, the Owens Valley Laboratory in Bishop, elevation 4,050 feet, serves as the local headquarters. All but the Summit Laboratory are kept open the year around.

Maintenance support is provided jointly by the University, the Office of Naval Research, and the National Aeronautics and Space Administration. A research physiologist and five maintenance men make up the permanent resident staff. Administrative headquarters are located in Berkeley, and inquiries concerning use of the Station may be addressed to Director, White Mountain Research Station, 2518 Life Sciences Building, University of California, Berkeley, California 94720.

**Foreign Language Training**

Research and field work overseas may be facilitated by oral proficiency training in any of twenty-five languages taught at the Defense Language Institute at the Presidio of Monterey. This unique program is available on a limited basis to University graduate students and faculty. For additional information, the campus Language Training Adviser may be consulted. Application forms may be obtained from the Secretary, University of California Language Training Advisory Committee, University of California, Santa Cruz, California 95060.

**Additional Units**

(Described under departmental headings, see Index.)

- Education Field Service Center
- Giannini Foundation
- Hastings Reservation
- Leuschner Observatory
- Lick Observatory
- Minerals Thermodynamics Experiment Station
- Sagehen Creek Wildlife and Fisheries Station
- Seismographic Stations
- University Art Gallery
- University of California Archaeological Research Facility
- Wildland Research Center
General Interest Courses for Upper Division Students

Architecture  140, Social and Cultural Factors in Architectural and Urban Design; 141, Form Determinants of the Dwelling.


Business Administration  110, Legal Environment of Business; 111, Social and Political Environment of Business; 137, Economics of Insurance; 150, Organizational Behavior; 154, Industrial Relations; 180, Introduction to Real Estate and Urban Land Economics.


Education  110, Learning and the Learner; 130, The School in America; 170, Introduction to Adult Education; 192, Social Foundations of Education; 193, Psychological Foundations of Education; 194, Humanistic Foundations of Education.


Forestry and Conservation  102, Forest Photogrammetry and Photo Interpretation; 111, Analysis of the Forest Economy; 115, Introduction to Forest Policy; 122, Forest Environment and Microenvironmental Influences; 123, Physiological Plant Ecology; 124, Plant Community Ecology; 132, Mechanical Processing of Wood; 141, Principles of Range Management; 142, Range Plants; 143, Range Animal Nutrition and Management; 175, Wildlife Populations; 177, Case Histories in Wildlife Management.

Geography 100, Principles of Cultural Geography I; 101, Principles of Cultural Geography II; 103, The Relations between Nature and Culture; 106, Political Geography: 110A–110B, Principles of Economic Geography; 112, Historical Geography of Transportation; 114, Industrial Localization; 120, Urban Geography; 130A, Natural Resources and Population; 130B, Open Land as a Natural Resource; 135, Energy as a Resource; 150, California; 151, Western United States; 152, Eastern United States; 153, Canada; 170, The Arid Lands; 171, The Humid Tropics; and all of the foreign-area regional survey courses in the 150 and 160 series.

German 191A, Freud and Literature.


Landscape Architecture 125, History and Literature of Landscape Architecture; 100, Survey of Landscape Architecture.

Linguistics 105, Descriptive Linguistics; 106, Transformational Grammar; 145, Comparative and Historical Linguistics.


**Optometry**  
Optometry 100: History of Optometry; Optometry 128: Introduction to Pathology; Physiological Optics 101: Anatomy of Eye and Orbit; Physiological Optics 102: Dioptrics of the Eye; Physiological Optics 125: Vegetative Functions of the Eye; Physiological Optics 129: Motility of the Eye; Physiological Optics 132: Visual Stimuli; Physiological Optics 151: Monocular Sensory Processes of Vision; Physiological Optics 160: Binocular Vision and Space Perception.

**Oriental Languages**  

**Rhetoric**  

**Scandinavian**  
100A–100B–100C, History of Scandinavian Literature; 106, History of Scandinavian Drama up to 1900; 107, The Plays of Ibsen; 108, Strindberg and His Writings; 109, Scandinavian Drama of the Twentieth Century; 120A–120B, The Novel in Scandinavia; 125, Old Icelandic Literature; 160, Scandinavian Mythology; 175, Kierkegaard.

**Slavic Languages and Literatures**  

**Hungarian**  
185A–185B, Survey of Hungarian Literature.

**Social Welfare**  
SECTION TWO

Courses and Curricula
Officers of Administration
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